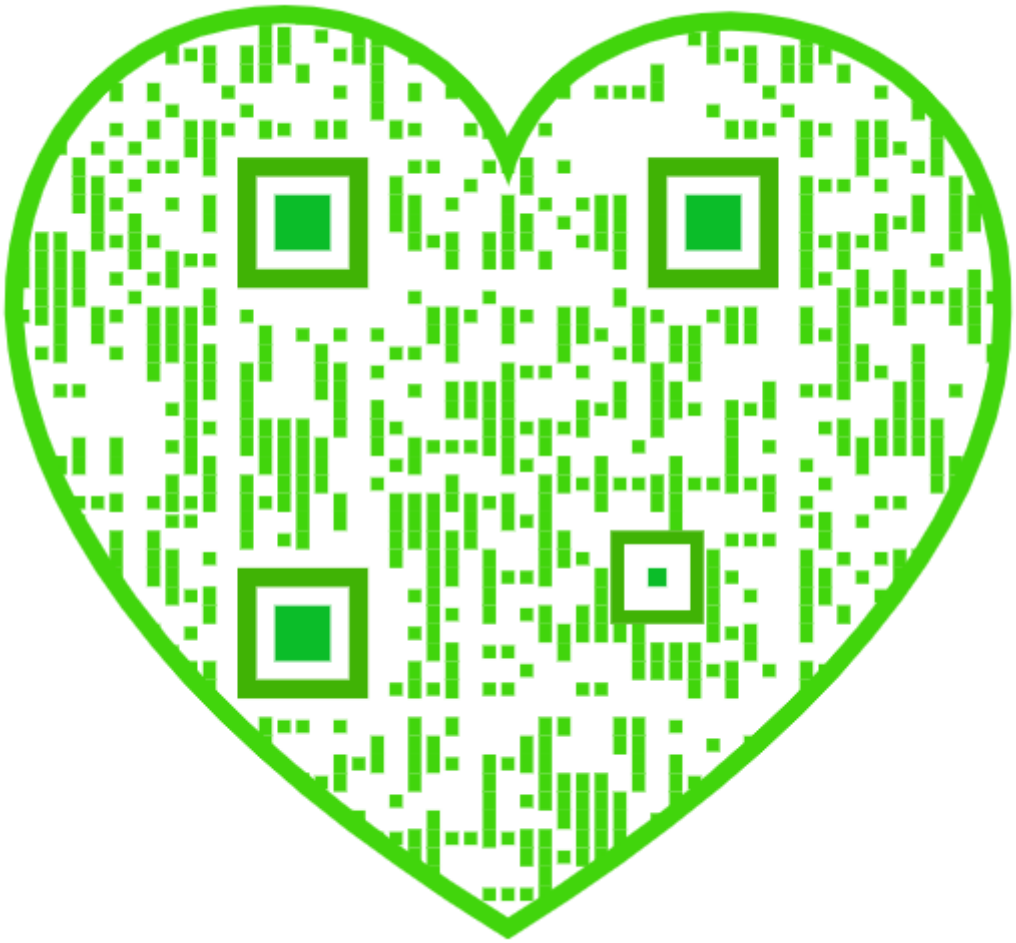

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Pacific Gas and Electric Office Building

The ARCHITECT & ENGINEER

JULY 1925

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Contents

VOL. LXXXII JULY, 1925 Number 1

Cover Picture—Night View, Pacific Gas and Electric Building, San Francisco

P. G. and E. Office Building, San Francisco - - *Frontispiece*
Bakewell and Brown,
Architects

The New Office Building of the Pacific Gas and Electric Company, San Francisco - - - - - - - - - - 51
Frederick Hamilton

Pacific Electric Subway Terminal, Los Angeles - - - 68

Grade Crossing Elimination - - - - - - - - - - - 70
Geo. Samuel Hill,
Consulting Engineer

Portfolio of Views, Group of Buildings for San Francisco Protestant Orphanage - - - - - - - - - - - 73

Why Have an Architect? - - - - - - - - - - - 81
Professor Frederic Julian Armstrong

Preliminary Studies of Proposed County-City Hospital Project, Seattle - - - - - - - - - - - - - 87
John Graham,
Architect

Registration Law Enforcement - - - - - - - - - - 90
William P. Bannister, F.A.I.A.

Painting Specifications and Their Relation to Results - - 92
W. C. Woodyard

Comparative Costs of Operating a Gas and an Electric Apartment - - - - - - - - - - - - - - 100

Steel Construction - - - - - - - - - - - - - - 104
Lee H. Miller, C.E.

Garden Dining Nooks and Ateliers - - - - - - - - - 113
Emerson Knight,
Landscape Architect

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P. G. & E. OFFICE BUILDING, SAN FRANCISCO
BAKEWELL AND BROWN, ARCHITECTS

Frontispiece
The Architect and Engineer
July, 1925

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JULY
1925

VOL. LXXXII
No. 1

The New Office Building of the Pacific Gas and Electric Company, San Francisco*

By FREDERICK HAMILTON

THE high office building is distinctly American, distinctly modern. All tall office structures are much alike as they are built to meet very similar needs. In the new head office building of the Pacific Gas and Electric Company, San Francisco has a structure that combines utility with a pleasing type of architecture—a building that not only answers the needs of a great public utility corporation but that is a monument to the city and to the Power Industry of the State of California.

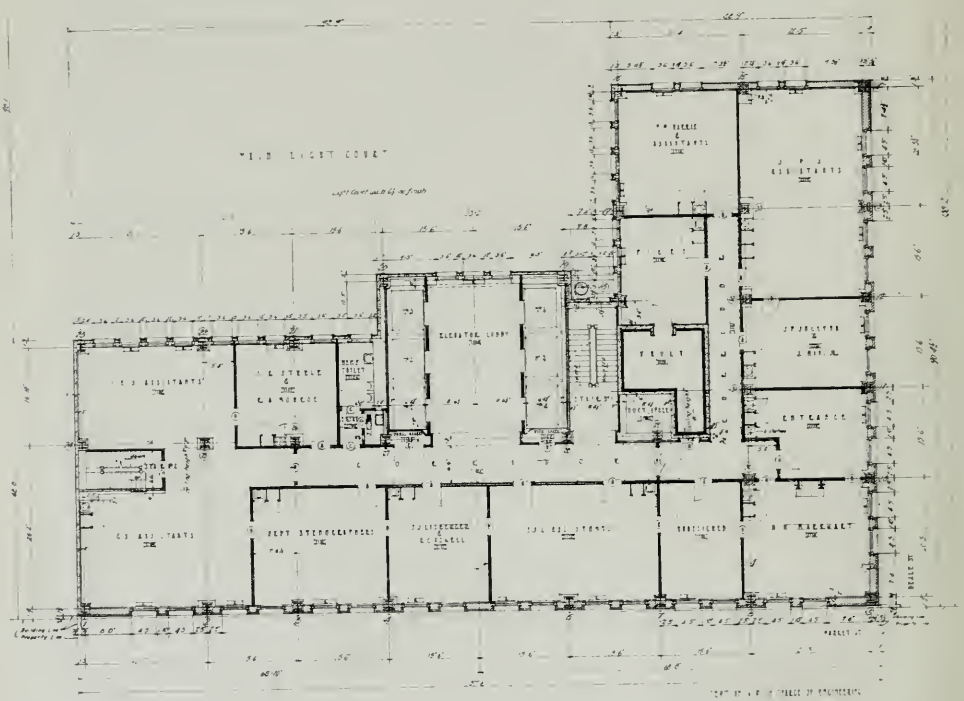
The architects have not attempted to develop a new style. A casual study of the great architecture of the world will show that no lasting style and no great building has ever been evolved which did not grow out of what preceded. New problems, new structural inventions, new materials and new ideas mould and change the architectural forms and motives, even change the entire spirit and effect of architecture, but always in a constructive and progressive manner, using and developing the forms and traditions that the preceding ages have produced.

But at the same time every building of merit has its own individuality, an individuality due in part to the personality of its architect, in part to the demands of the man or group for whom it is built, and largely to the peculiar needs of those by whom it is to be occupied.

The exterior of this building consists of a high base running through three stories, a large simple shaft on top of which is placed the crowning motive, a decorative arcade. Above the crowning motive is placed a high attic, consisting of two stories which house the rooms designed for the greater comfort of the employees, such as general rest rooms, doctor's office and a large restaurant for employees. The upper of these stories also contains and conceals the tanks, elevator machines and other utilitarian necessities which all too frequently deface the roofs of high buildings.

*The construction work was conducted through direct contracts between the various trades and the owner, no general contractor having been retained. The management of the work was given to the Department of Enginering of the company.

The entrance is placed in a large arched niche which runs up through the first three stories. It is marked by a very interesting group which tells the story of the power industry and forms a rich decoration at the central point. The decorative interest and form of this central feature is carried around the building by an arcade running through the first two stories, each arch being decorated by the head of a Mountain sheep, reminiscent of the high mountains and snow fields, the source of the water power on which this industry is based. The heavy band above marks the division between base and the main shaft of the building, just as the band at the top of the shaft marks the division between the base and the crowning motive.



TYPICAL FLOOR PLAN, P. G. & E. BUILDING, SAN FRANCISCO
Bakewell and Brown, Architects

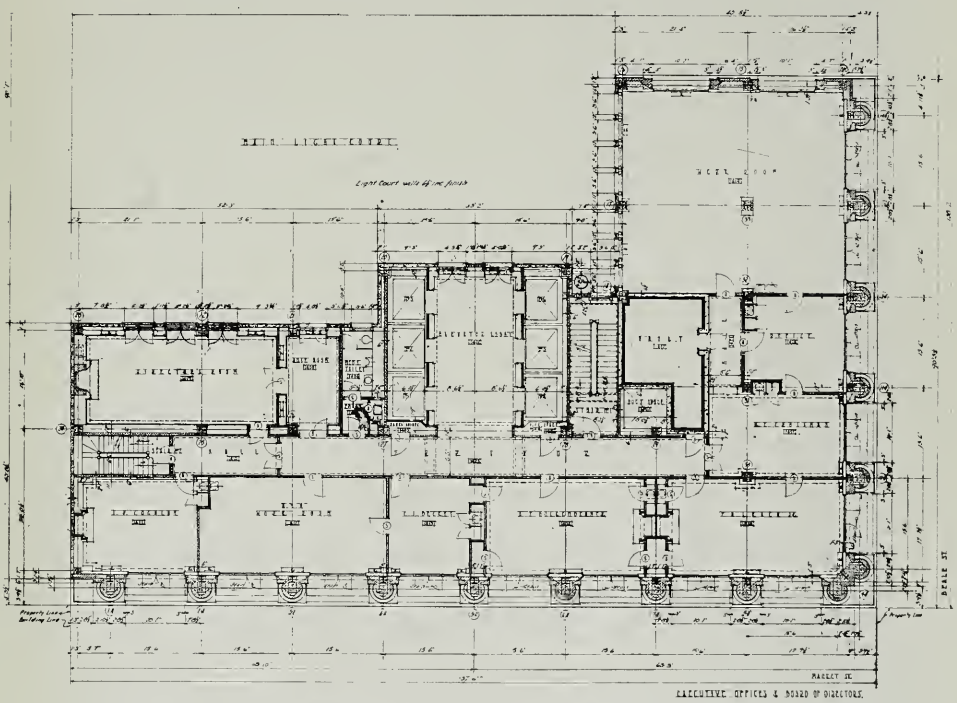
The base is treated with large arched windows consistently decorated. The shaft is entirely simple and utterly devoid of ornamentation. Its many small windows form the only scheme of decoration. The crowning motive is broken up by columns into a rich and interesting series of buttresses which give brilliant play of light and shadow. In this way the shaft in its simplicity forms a pleasing contrast with the more highly decorated base and top. The use of grey terra cotta is especially adapted to bring out the light and shadow of the ornamental portions of the design.

In the entire scheme of exterior treatment there is perfect accord between the actual rooms or spaces in the building and the architectural form adopted, so that it has not been necessary either to sacrifice the

practical requirements to the architecture or to sacrifice the latter to the requirements.

The interior plan is similar to that of any modern office building, laid out to give the maximum of light and the most direct and convenient access to the offices.

The first floor being most readily accessible, is devoted to those departments which are in closest touch with the public. The entrance leads directly into a spacious vestibule. The most important space, the elevator lobby, is directly in front of the entrance, while the large departments are to the right or left as one enters. The large assembly room is back of the elevator lobby and directly in front of the entrance. The



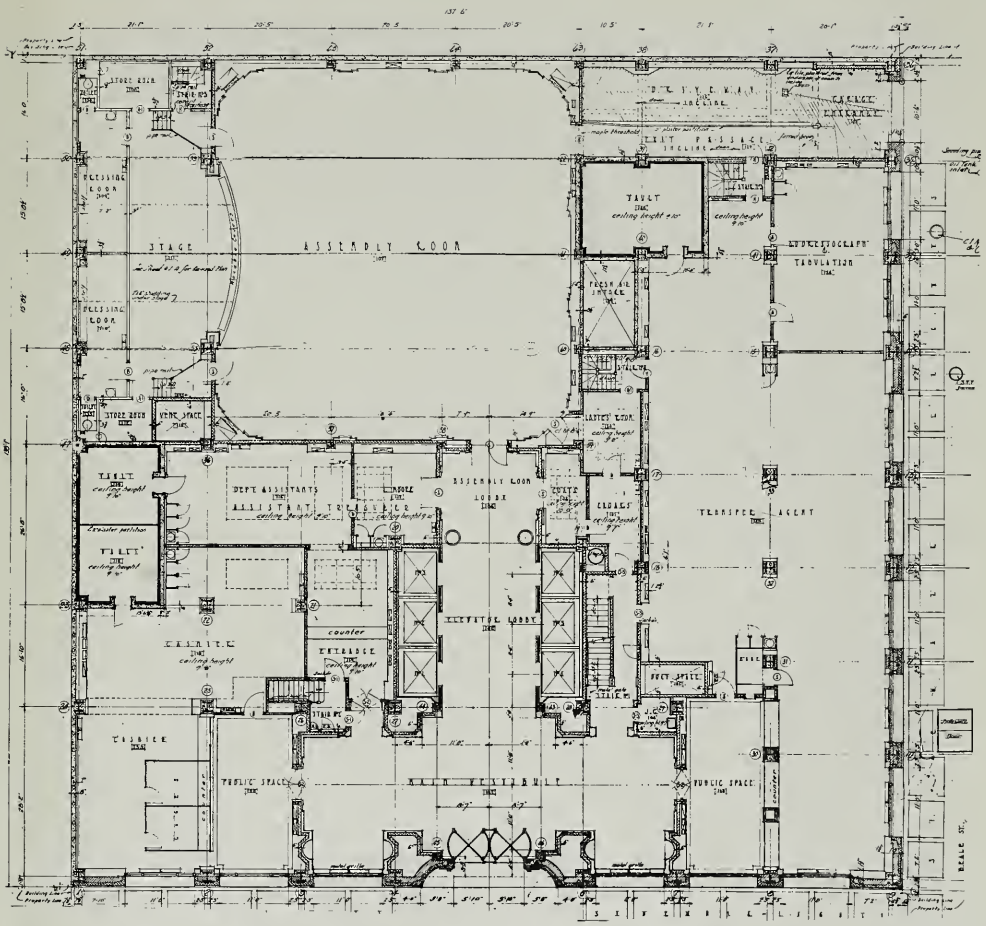
PLAN, EXECUTIVE OFFICES, P. G. & E. BUILDING
Bakewell and Brown, Architects

walls of the vestibule and entrance lobby are of warm buff Bedford stone with a richly decorated coffered ceiling.

The typical floors from the seventh to the sixteenth stories all have large, well lighted elevator lobbies. As these spaces are spacious and light, they are to be used as entrance lobbies or waiting rooms to each story. The information desk is placed here and one having business on any of these floors will wait here until conducted to the office of the official he wishes to see.

On the fourteenth floor this lobby and the main corridor are richly paneled in oak to mark the importance of this floor which is occupied by the executive suite. The directors' room is the main feature, being very well proportioned and treated with oak paneling. The offices on

P. G. & E. OFFICE BUILDING, SAN FRANCISCO
BAKEWELL AND BROWN, ARCHITECTS



ASSEMBLY HALL FLOOR PLAN, P. G. & E. BUILDING
Bakewell and Brown, Architects

the street fronts of this story open out onto a balcony from which an extensive view of the city may be had.

A description of this building would be incomplete without some mention of the color scheme. In order to make the ornament, the fourteenth story collonade and other architectural detail count to the best advantage, the use of a light colored material was adopted for the exterior. The most delicate ornament shows clearly, every line counts distinctly and each shadow imparts its full impression on the light granite grey color selected. The red roof forms a pleasing contrast to the grey walls and makes a bright spot of color at the top of the building. In the same way the painted iron at the entrance and first story windows give a repeated note of color to the base of the building.

On the interior a warm greyish tan forms the dominating color. This is found in the buff stone of the vestibule, on the walls of the offices and corridors and is further accentuated in the greyish stain of the woodwork and furniture. A sparing use of brighter colors is also made —blue and gold for the fixtures, bulletin boards in the vestibule, the

stair balustrade and the letters on the office doors and entrances. These brighter spots give a lively and pleasing contrast to the more sober tone of the prevailing color scheme.

* * * *

Pacific Gas and Electric Company was incorporated in October, 1905; being the outgrowth of several smaller organizations. It is the pioneer in the hydro-electric power development, long distance high tension transmission lines, high pressure gas mains, customer ownership and many other utility activities bearing directly as well as indirectly on the actual prosperity and comfort of the people of California. This company supplies an area of 59,000 square miles with an aggregate population of approximately 2,200,000, or over half the people of California. It ranks as one of the most progressive utilities in America.

The Pacific Gas and Electric Company is owned, operated and managed by Californians, rendering service to the people of Northern and Central California. That being so, it is fitting and proper that buildings comprising such a system made up as it is of a number of plants which are dependent upon one another for the perfect fulfillment of their mechanical requirements, be possessed of a distinctive character which has to be identified with Pacific Service. Since the incorporation of the company this has been gradually brought about in the building construction program. There was a time when little attention was paid to the appearance of buildings which housed such mechanical installations as were necessary to produce and distribute electric energy, but when the pioneer days had passed and a number of electric generating plants and distributing systems operating had become amalgamated into one large system, known to the world as Pacific Service, it was but consistent with the up-to-date policy of the enterprise that its physical features should be made pleasing to the eye as well as capacity of inspiring confidence in the company's strength and ability to deliver perfect service in the fullest sense.

* * * *

Some Structural Features of the New Pacific Gas and Electric Company's Building

By C. H. SNYDER, Consulting Engineer

FROM an engineering and probably from a popular point of view, the design of the foundation of the new office building of the Pacific Gas and Electric Company is most interesting. Early maps of San Francisco show the line of mean low water at approximately Beale, Davis and Market street intersection, and a depth over the location of the building of from one to six feet at low water. The area was subsequently filled with sand and clay to the present elevation of about thirteen feet above mean low water. The basement floor is, therefore, about the elevation of the original mud flat of the '50's.

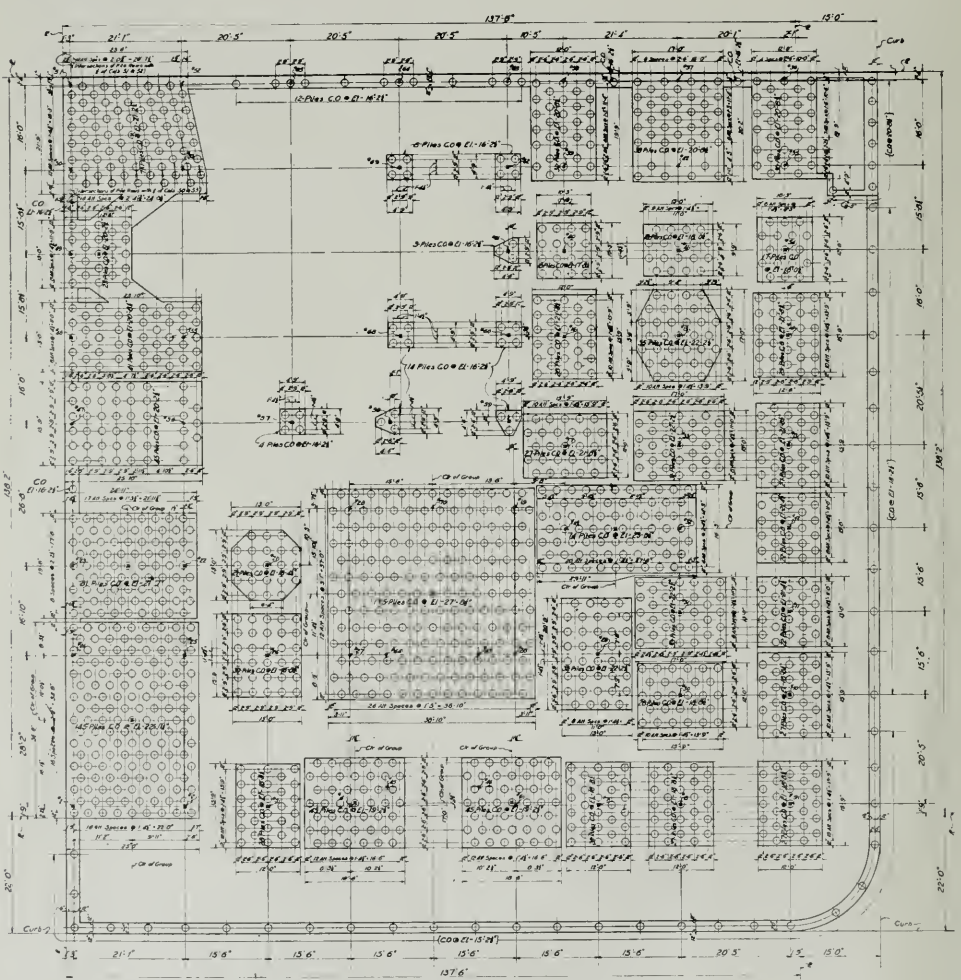
Numerous borings were made at the site, indicating that the underlying hardpan was about 100 feet below the present curb level, the intervening strata consisting of the top fill, mud, and, in some portions of the lot, hard clay lenses of approximately five feet in thickness at a considerable depth below the surface. It was decided that for a building of such a character as this, the supporting piles must go to the underlying hardpan. This required not only long piles, but some sort

LOOKING DOWN MARKET STREET FROM SUTTER, SAN FRANCISCO
P. G. & E. BUILDING ON THE RIGHT

Copyright by Gabriel Moulin

of means for getting them through the lenses of hard clay above referred to. Ordinary pile-driving equipment would not accomplish this task. The piles were finally driven by a 7500 pound steam hammer, assisted, where hard strata was encountered, by a high pressure jet of water, and brought to place at about 105 feet below the street. The piles were of Oregon pine, especially selected, and were about 85 feet long, the cut-off, or top, being generally about 20 feet below street level.

The permanent ground water level being some eight feet below street level, it was several feet above the basement floor. Waterproofing was,

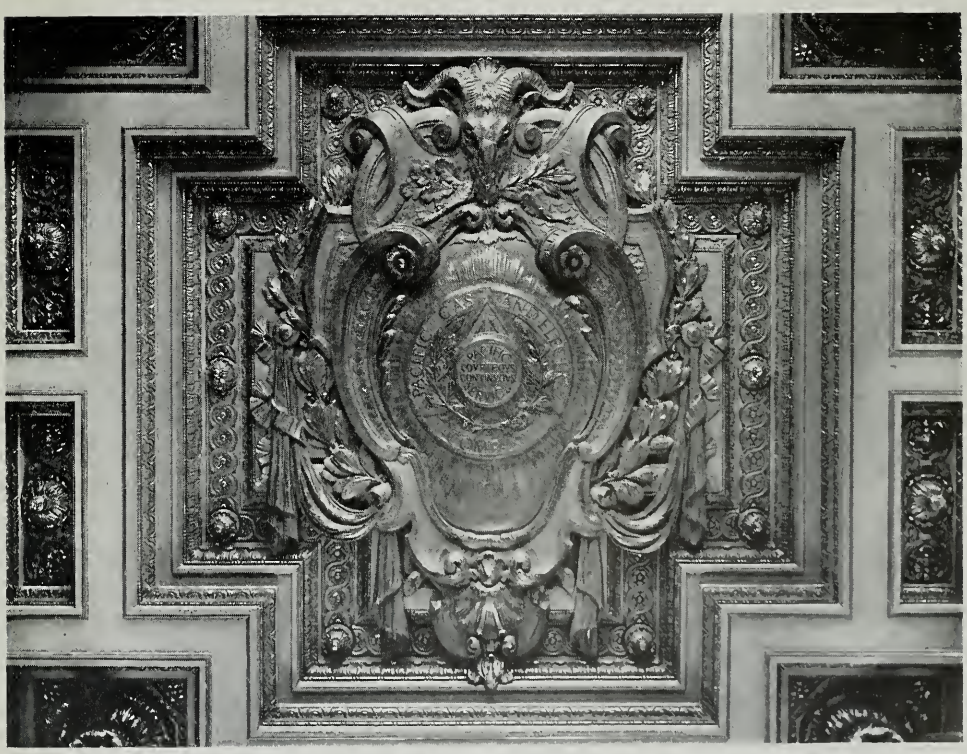


PLAN OF PILE FOUNDATIONS, P. G. & E. BUILDING
C. H. Snyder, Engineer

therefore, necessary and was accomplished by a membrane of roofing felt, heavily impregnated with an asphaltic compound, extending across the basement floor and up the sides all around and made absolutely water-tight. Upon this a heavy concrete layer was placed to resist the

DETAIL OF COLONNADE, P. G. & E. BUILDING
BAKEWELL AND BROWN, ARCHITECTS

DETAIL MAIN ENTRANCE, P. G. & E. BUILDING
BAKEWELL AND BROWN, ARCHITECTS



MAIN VESTIBULE AND DETAIL OF CEILING, P. G. & E. BUILDING
Bakewell and Brown, Architects

MAIN VESTIBULE, P. G. & E. BUILDING,
BAKEWELL AND BROWN, ARCHITECTS

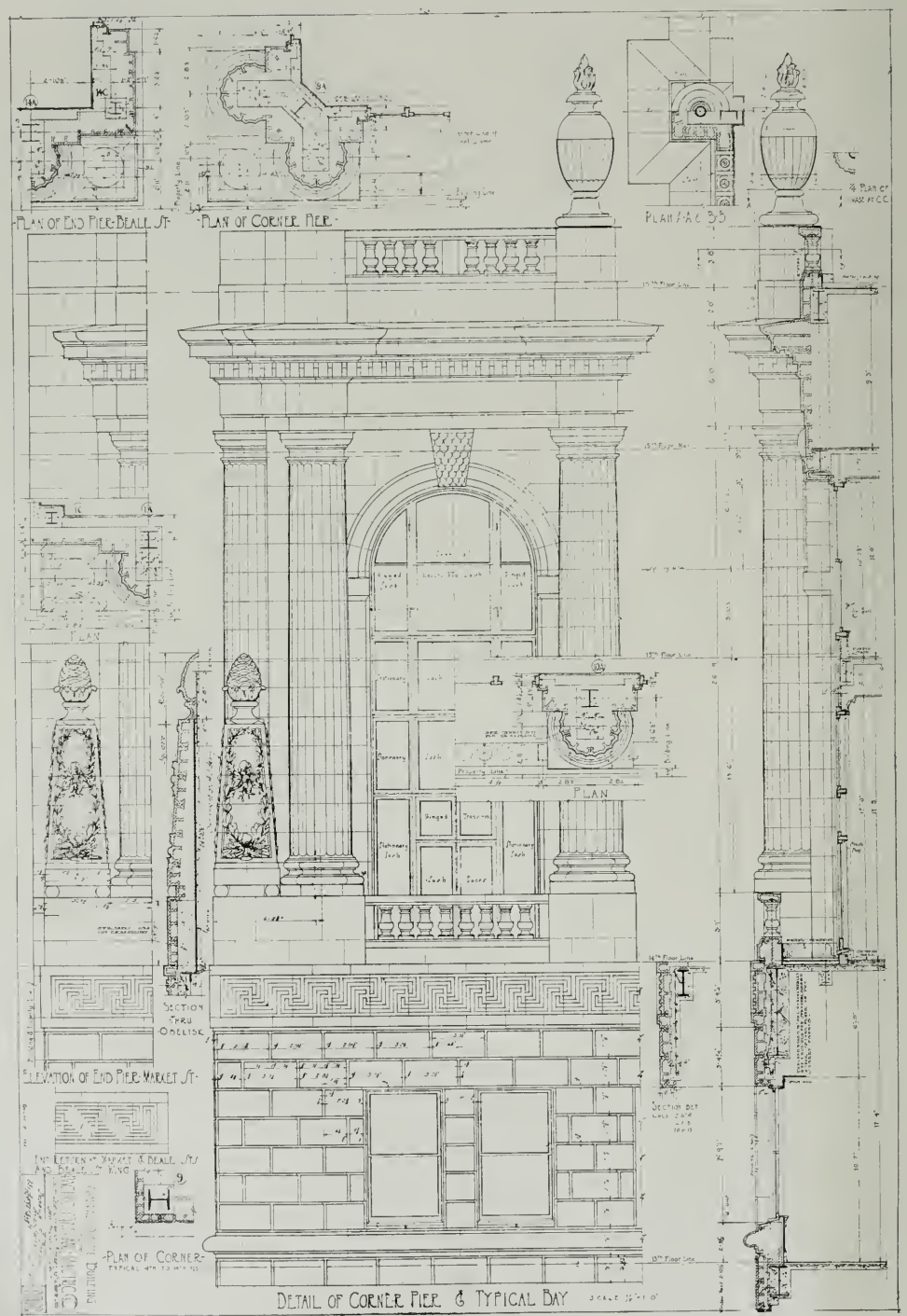
VESTIBULE OF EXECUTIVE OFFICES, P. G. & E. BUILDING
BAKEWELL AND BROWN, ARCHITECTS

P. G. & E. BUILDING FROM MISSION STREET
Bakewell and Brown, Architects

AUDITORIUM, P. G. & E. BUILDING
Bakewell and Brown, Architects

VICE-PRESIDENT AND GENERAL MANAGER'S OFFICE, P. G. & E. BUILDING
Bakewell and Brown, Architects

DIRECTORS' ROOM, P. G. & E. BUILDING
Bakewell and Brown, Architects



P. G. & E. BUILDING, SAN FRANCISCO
BAKEWELL AND BROWN, ARCHITECTS

STOCK TRANSFER OFFICE, P. G. & E. BUILDING, SAN FRANCISCO
Bakewell and Brown, Architects

upward pressure of the water. This is a mere outline of the method used. Elevator pits, boiler room, basement garage and cantilever footings introduced many complications into the waterproofing problem, all of which were successfully overcome. These difficulties, however, necessitated a considerable use of structural steel in the foundations, some 550 tons being below the basement floor, in addition to the concrete reinforcing. One rather interesting feature was the size of some of the cast iron column bases, two of which were seven feet square and three and one-half feet high, weighing eight tons each.

The skeleton of the building is of the full steel frame type, with intermediate steel beams—the finest type of steel structure. It is of the conventional design for structures of this character, with no especially novel features.

Wind bracing was, of course, provided in accordance with the best practice. Few, except those actually engaged in the design of structures, have any idea of the enormous pressures exerted by a stiff breeze. At the pressure specified in the San Francisco Building Ordinance, roughly corresponding to the maximum wind velocity observed here during the last sixty years, the pressure on the Market street front amounts to 350 tons, and this pressure must be carried to the ground through the steel frame and its wind bracing.

Floor slabs are of reinforced concrete throughout, and the concrete carried around all steel work as a protection against fire and

corrosion. The concrete slabs project into the walls at each floor to form a support for the brick and terra cotta exterior, so that all masonry is firmly bonded to the skeleton steel frame, making the building monolithic in character.

Some figures may be of interest:

Area of lot	19,000 sq. ft.
Gross floor area in building	200,000 sq. ft.
Cubic contents	2,700,000 cu. ft.
Total height sidewalk to roof	260 feet
Number of piles	1,500
Structural steel	3,200 tons
Approximate weight of building	42,000 tons

* * * *

Pacific Electric Subway Terminal, Los Angeles

CONSTRUCTION has been started on a new terminal building in Los Angeles for the Pacific Electric Company. Designed by Architects Schultze & Weaver, the new terminal is said to be the largest building project of the year in Southern California.

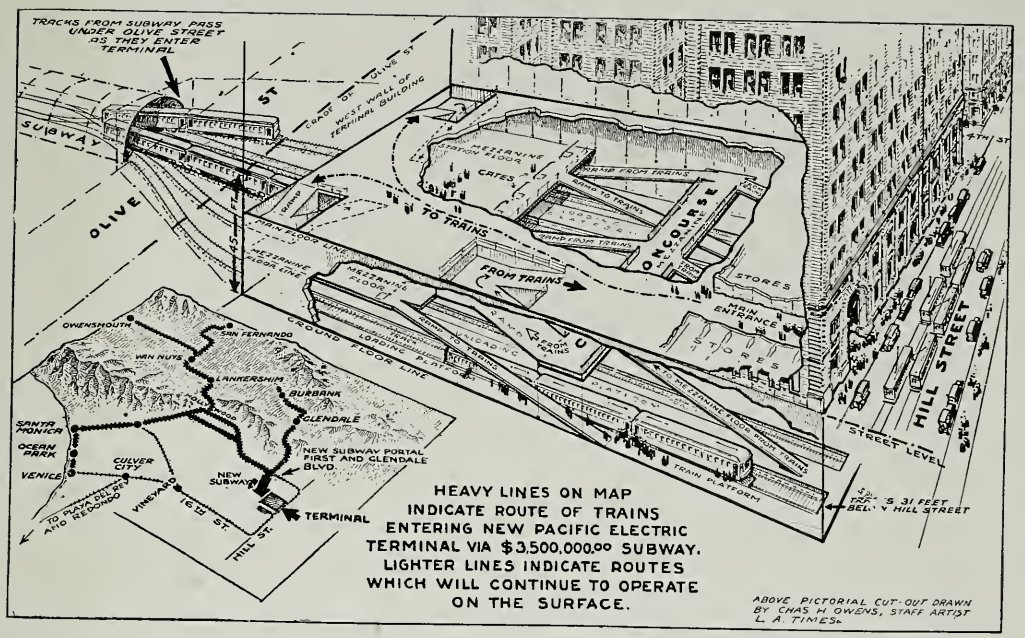
The railway terminal site has 241 feet frontage on Hill street and extends through an equal width to Olive street, a distance of 324 feet. On the north 140 feet of this site, extending through from Hill to Olive, will be covered by the terminal station. All tracks have been moved to the south side of the site on a level with Hill street and will take care of the surface cars operating on that thoroughfare. A temporary station has been provided by cutting down the old Masonic Temple building fronting on Hill street and remodeling it for waiting room and ticket offices. This building, which is of brick construction, has been redesigned making a very attractive structure with plastered exterior and terra cotta trimmings.

The subway tracks will come into the terminal station from the west at a level about 28 feet below Hill street. Excavation for the terminal is being carried through Olive street in an open cut to a connection with the subway 66 feet west of Olive. The roof of a four-story structure under the street will carry the new pavement on Olive. As there is a sharp grade in Olive street rising to the north the excavation on that side will be carried to a depth of more than 60 feet below the high point.

It will be necessary to underpin the south walls of the reinforced concrete garage at the southeast corner of Olive and Fourth streets, occupied by the Black and White Taxi Company, which border the excavation. This underpinning will be carried to a depth of about 60 feet below the present footings of the garage. Reinforced concrete will be used for the underpinning.

There will be five tracks in the subway terminal station and sufficient room to make possible the operation of six-car trains on a 1½ minute schedule, which will take care of an immense amount of traffic. The station is planned with a view to handling large crowds with facility and without confusion. Entrance to the station will be off Hill street on the south side of the terminal structure through a lobby 27 feet wide and 127 feet long to the main concourse on the Hill street level. There will be 12 shops opening off this lobby.

At the rear of the main concourse there will be ten ticket windows back of which, on either side, will be ramps 16 feet wide leading to gates



Courtesy Southwest Builder and Contractor

PERSPECTIVE, PACIFIC ELECTRIC TERMINAL, LOS ANGELES
Schultze and Weaver, Architects

on a mezzanine floor below, from which three ramps will give access to the trains. These ramps land the passengers about the middle of the station. There will be six exit ramps leading from the train shed to a concourse on the mezzanine from which the departing passengers will converge into wider ramps leading to the street level on the south side of the main concourse. Incoming and outgoing passengers will thus be kept out of each other's way. The train shed will be 17 feet 6 inches high and the mezzanine 10 feet 6 inches high.

Entrance to the office building will be off Hill street on the north side of the building to an elevator lobby 41x35 feet. Six elevators operating from the street level only will serve the upper floors of the building. Light courts on the south side of the building will divide it into four bays, three of which will be subdivided into offices. Two floors in the rear of the building off Olive street will be used for automobiles.

Both the subway terminal station and the office building will be steel frame construction with reinforced concrete floors and concrete walls below the street. Exterior walls of the building will be brick with terra cotta facing on the Hill street front above the first story which will be faced with granite. The entrance lobby and main concourse and the elevator lobby and entrance to the office building will have marble floors and walls. Two semi-circular panels with designs wrought in glass mosaic will be a feature of the elevator lobby. The P. J. Walker Company, San Francisco and Los Angeles, has the contract on a fee basis.

* * * *

Grade Crossing Elimination

By GEORGE SAMUEL HILL, Consulting Engineer*

ALL over the United States there is a great awakening of interest in the subject of city planning and there is a growing appreciation of the value to a community of developing a regional plan involving highways, transportation, harbor development and other features far in advance of the immediate requirements. The term "city planning" formerly covered the idea of the city beautiful only, but it now also includes the idea of the city practical, and the two ideas are not necessarily inconsistent.

One feature of city and regional planning which is of paramount importance is the subject of the elimination of grade crossings. Definite plans are desirable in order that there may be an early declaration of policy and program and the avoidance of haphazard, piecemeal and uncorrelated development. Too often the present procedure is to defer action until the unbearable stage is reached or until some serious accident has forced the conviction that a change is necessary. We are as far behind the times in crossing elemination in most cities as we are in the housing situation. The railroads as a rule oppose these improvements because of the inflated costs now prevalent. Co-operation by the railroads and public is desirable and the thorough economic study of the grade crossing problem for a whole city or region would be profitable for all concerned. There are six methods of eliminating grade crossings as follows:

RAILROAD OVER HIGHWAY 14-FEET CLEARANCE

1. Complete elevation of railroad. Highway at grade.
2. Partial elevation of railroad. Partial depression of highway.
3. Railroad at grade. Complete depression of highway.

*1050 Eddy street, San Francisco.

HIGHWAY OVER RAILROAD 22-FEET CLEARANCE

4. Complete elevation of highway. Railroad at grade.
5. Partial elevation of highway. Partial depression of railroad.
6. Highway at grade. Complete depression of railroad.

The economics vary with the site and there are generally restricting conditions, such as grade, drainage and damages to property which may determine the type to be used.

Methods 1, 2 and 3 are favorable in that they require only 14 feet vertical clearance below the structure in the State of California, while methods 4, 5 and 6 require 22 feet. On the other hand, railroad loadings are much heavier than the highway loadings.

Method 1 would be used where drainage would be difficult or where there are also streets parallel with the railroad which could not be closed or changed in grade. An elevated railway is a good example of this method, but where the railroad occupies an embankment the parallel streets should be at some distance away or otherwise the danger at the subway entrances will be as great as at the original grade crossing.

Method 2 is the usual method in open flat country unless there are many actual or potential yards or industries to be served. The tracks are generally raised about 10 feet and the streets depressed seven feet. The method is very economical, but requires that all the work be carried out at practically the same time. This method was used in Chicago by the Illinois Central Railroad in Hyde park.

Method 3 is applicable when there are large yards or many established industries which would be affected. This method has been recommended for Stockton, California, where the railroads occupy a strip one block wide and the first subway has been ordered built at Miner avenue.

Method 4 is generally used when there are yards to be crossed and is being applied in the freight district of Chicago along the river and west of the loop.

Method 5 is applicable in rolling country utilizing the existing railroad cuts. Also when there are streams to be bridged by the highway with railroads occupying one or both banks, this method is suitable, and is being applied in Los Angeles for the viaducts over the Los Angeles river recently authorized by bond issue and now under construction. In this case it was found that the riverbank tracks could be depressed without danger from flood flow. The approaches to these viaducts are short but they could be replaced in the future by long approaches over the entire industrial district when conditions warrant with height sufficient for streets, but not for railroads to pass under.

Industrial spur track development would result at right angles to the river toward the business section of the city with industrial leads alternated with streets producing the least interference with radial traffic which is generally of more importance than circumferential. This method of development has been called the "herringbone" system.

Method 6 is used over open cuts. Drainage is an important factor in this method. The Flatbush District of Brooklyn is traversed by such a cut.

Mr. Turner, the New York transportation expert, has recommended a series of radial thoroughfares for Detroit which he calls "Superhighways." These are designed for fast motor traffic and are as free from grade crossings as the rail lines which occupy the center strip. Where possible there would be economy in combining the highways with the existing rail routes as one set of approaches for cross streets

would suffice for both. To show that these "superhighways" are not simply a remote possibility the experience of San Francisco with its Bay Shore Highway may be cited as an example. Since the existing road along the Bay was built a decade ago the traffic has increased twelve-fold. The new Bay Shore Highway, when completed, will be at least 125 feet wide and will be kept free from cross traffic as much as possible. A minimum speed of 45 miles per hour is being considered for at least a portion of this highway.

Proper co-ordination of plan requires that due consideration should be given to spacing of cross streets, avoidance of skew crossings, the resulting grades of both streets and railroad, the effect upon railroad yards, crossings and turnouts and future requirements as to street capacity and extra trackage. The best plan is a flexible one and one that has been thought out all the way through in relation to other factors of the city plan.

* * * *

English Architect Awarded Medal

The gold medal of the American Institute of Architects, awarded only six times in the eighty years of the Institute's existence, was presented to Sir Edwin Landseer Lutyens of England, at the annual convention of the Institute, April 24, at the Metropolitan Museum of Art, New York City. The presentation was made by Mr. D. Everett Waid, President of the Institute.

Sir Edwin, originator of the Queen's Doll House, a miniature palace presented to Queen Mary at the British Empire Exhibition at Wembley last summer, is the architect of many British Government buildings and English country houses and a landscape artist. Among his works are the Whitehall cenotaph, the British School of Art at Rome, British Art Exhibition Building in Rome, and the Picture Gallery and South African War Memorial in Johannesburg. He is at present working on British Administration buildings at Delhi, India.

The six men who have received the gold medal of the Institute are Sir Aston Webb, Charles Follen McKim, George B. Post, Jean Louis Pascal, Victor Laloux and Henry Bacon. Only Sir Aston and M. Laloux are living.

* * * *

To Design Santa Barbara Buildings

Architects Wm. Mooser and Son, San Francisco, and Roland F. Sauter of Santa Barbara, have been commissioned to prepare plans for a new County Court House at Santa Barbara to cost $800,000 and also a County Hospital to cost $200,000. Architect Arthur B. Benton of Los Angeles, has been commissioned to prepare plans for the New Arlington Hotel, the structure to replace the one recently damaged by earthquake. The Spanish type of architecture will be followed in the design of all the above mentioned buildings.

* * * *

Passing of Stockton Architect

Mr. E. E. Brown, for more than twenty years a practicing architect in Stockton, died at the St. Joseph's Hospital, in that city, July 3rd, following an operation. Mr. Brown designed the Stockton Hotel which is among the early examples of modified Mission style. He also was the architect of the beautiful Lee A. Phillips home in the Beverly Hills district of Los Angeles and which is now occupied by Douglas Fairbanks and Mary Pickford. Mr. Brown was a native of New York and was fifty-five years old.

PORTFOLIO OF VIEWS

Group of Buildings

for

San Francisco Protestant Orphanage

BLISS AND FAVILLE

Architects

SAN FRANCISCO PROTESTANT ORPHANAGE, ADMINISTRATIVE BUILDING IN CENTER

SOUTH ENTRANCE, ADMINISTRATIVE BUILDING, SAN FRANCISCO PROTESTANT ORPHANAGE

AN ENTRANCE DETAIL, SAN FRANCISCO PROTESTANT ORPHANAGE

AN ENTRANCE DETAIL, SAN FRANCISCO PROTESTANT ORPHANAGE

NORTH ENTRANCE, ADMINISTRATIVE BUILDING,
SAN FRANCISCO PROTESTANT ORPHANAGE

COTTAGES, SAN FRANCISCO PROTESTANT ORPHANAGE
SAN FRANCISCO, CALIFORNIA

LIVING ROOM IN COTTAGE NO. 4, SAN FRANCISCO PROTESTANT ORPHANAGE

TYPICAL BED ROOM, SAN FRANCISCO PROTESTANT ORPHANAGE

Why Have An Architect?

By FREDERIC JULIAN ARMSTRONG*

"GOOD morning, Kelley," said Mr. Jackson, a young suburbanite to his neighbor who had recently moved into the little town of Sandsville. "How's that new house of yours coming on? Who's going to design it for you?"

"Well," said Kelley, "to tell you the truth it isn't getting on very fast. I'm thinking a lot about it, but I can't afford an architect, so I'm sort of designing it myself with the help of the contractor who's going to finance and build it for me. But this fellow seems to think I want a sort of a palace, and about half the ideas he puts up to me I can't afford. How's yours?"

"Oh, I'm not employing an architect, either," said Jackson. "My wife and I have figured we know just what kind of a house we want and we're designing it ourselves. Jove, but some things do cost money, tho' don't they? I had no idea that plumbing was so expensive, or excavating or painting either, until I got some tentative bids last week. And, say, do you know those grasping, extortionate plasterers want $14.00 a day! That's more than I'm making myself, and it's my house they'll be working on."

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Mr. Kelley and Mr. Jackson represent two typical viewpoints so common among amateur builders.

People who build without an architect like these are divided into two classes—the folks who think they cannot afford an architect and those who think they can do very well without him.

Those who feel sure that they cannot afford an architect are fooling themselves, as the architect can save them a good percentage on the cost of their work. This has been proved over and over again. The average person about to build knows little or nothing of the value of materials, or labor, of how best to let a contract for building to advantage, or how to carry on the supervision of the work in order to save time and money and protect his property from liens.

Then there is the class which knows what it wants. Every year hideous monuments are piled up to such people. These places glare out at us, offend their neighbors and depreciate values about them. This class generally has closed bid contractors furnish free plans; something for nothing is likely to work in reverse. The client will pay something and get nothing.

Many such plans and specifications are so cheaply and carelessly drawn by small contractors and plan factories that the owner has no protection in a contract of which he is a part.

Builders' interests are not identical with those of the owner. It must be conceded that the owner and builder necessarily view the job from different angles and therefore there is need for the owner to have a representative whose interests are identical with his. This position naturally falls to the architect, as the architect's purpose is to produce a satisfactory job at a minimum cost, while the builders' interest is in his profit.

The ordinary layman who is going to build needs a confidential advisor who will give him advice as to financing, types of construction, materials to be used and those to be avoided and honest advice about any contractor. Such an advisor is a competent architect whose train-

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ing enables him to design a more economical and efficient structure than those without his training. A building properly designed will cost less than a similar building improperly designed. Economical arrangement of space, proper location of plumbing, properly designed timbers and beams, all save money.

The services of a competent architect and a reliable contractor are more than worth while. All about us literally thousands of dollars are being misused and wasted in building construction by owners who are tempted by free plans and low bids, and did not believe a competent architect and a reliable bonded contractor were worth paying for.

In one case of a Los Angeles builder of a store-and-apartment building, the contractor's bid of $22,000 was accepted, being the lowest. The actual cost of the completed building was over $45,000, due to the poor, carelessly drawn plans and obscure specifications of the contractor who furnished free plans and specifications and had no supervision of his work.

The owner of every building constructed pays for the services of an architect whether he employs one or not; but with this material difference:

When the architect is employed the owner actually receives value for the small compensation paid the architect, but when no architect is retained the cost of architectural service is more than absorbed in the poor quality and character of materials used, in bad workmanship and wasted money, to say nothing of the other difficulties and worries brought on.

Last year a Los Angeles investor was building a small apartment building on the "closed bid" plan. He had paid the contractor $10,000 on account when he was told that the building could not be finished. The contractor was "broke." Investigation showed that he had expended but $6,000 on the investor's building but had used the remaining $4,000 on other projects of his own. The lawyer retained by the investor showed him that his contractor had made no stipulation in the contract that all funds paid were to be used in the construction of that particular building. The investor had no legal remedy, so he was out his $4,000, with liens and a partially finished building on his hands and the trouble and bother of securing a proper contractor to finish the job.

A competent architect will greatly reduce the cost of a building, and his planning and design will add to its value by insuring a more ready sale at a good price. A competent man will save many times his comparatively small compensation and obtain the best results with a minimum of worry and a maximum of economy.

Certain fundamental points should be considered by a prospective builder, which if properly carried out, will produce a well constructed building, financed at a low cost and avoid the many financial difficulties that are likely to arise during the construction. On the other hand, if any one of these points is not given proper consideration, the result may be disastrous.

For a very fundamental reason the architect is the proper man to finance the building. His interests are the owners—that is, to erect the best building possible that can be built for the money available. He is not looking for a profit, either from the construction or from the cost of materials. Financiers realize this, and are willing to make a larger loan if a building is to be supervised through the offices of a competent architect, than if handled in any other way.

It is a part of the architect's business to know the financial aspect of the owner's project and to give advice and data on this subject of vital importance to the owner. The competent architect can procure for the owner the most economical financing for the project, protect him against fraud, cheating, liens, debts, and save him, many times, bonuses or "rakes" of which he has no knowledge. He will see that money paid the contractor goes for materials and labor put into the building which will prevent liens and litigations later on, and the owner will have that "freedom from worry" during the building operation that he most certainly cannot have when working without the architect.

Some realty sellers frequently work in conjunction with contractors, tipping them off concerning the purchase of lots and receive from 2% to 3% of the contract price each time that a building contract is landed. If the contractor is not strong financially he will go to some shady mortgage company and pay the agent $200 to $300 more for pushing a loan through. He conceals both of these transactions by including them in his price to the purchaser, who is thus out several hundred dollars before any work is started. This the architect cannot do, as his fee is fixed, usually at 6% of the construction cost.

In one case of a Hollywood builder of a $40,000 home the owner took the advice of the realtor who sold him the lot as to the best contractor to build his home. The contractors furnished plans and specifications and set his own price, (a closed bid), which to the owner seemed reasonable as he was inexperienced in building costs. Results were $1000 went to the realtor from the contractor for his tip and the contractor cleaned up 25% profit. With a competent architect and competitive bids the owner would have had a better planned and built home for about $4000 less cost.

The architect will secure through competitive bids a contract price which will be the lowest cost consistent with the class of work and materials desired and he will examine the responsibility and bond of the contractor before the work is awarded. His design will give economy of space, and size and arrangements of rooms will mean the use of less material. The owner will have in him one who is most eminently fitted to take care of his needs and interests; see that the costs are the lowest consistent with good workmanship, guard against misunderstandings or unforseen extras, mistakes or substitutions, liens or litigations, serious defects in workmanship or materials; see that the owner enters into a proper building contract, and that the building is completed without delay for the contract price. He will be assured of value for his money, and will have the broad experience and judgment of the architect as how best to spend the money in the building.

In another Hollywood apartment and store building, the owner thought to save money by employing a so-called designer, at 2%. On the $35,000 building the extras amounted to $7,000. Liens have held up the construction for a year now, and just how much the owner has lost in cash has not yet been determined.

The competent architect will assure the owner of a proper foundation, right methods of construction and proper materials in the building which will prevent the following unpleasant facts that are of too frequent occurence: leaky roofs, bulging and cracked walls, squeaking floors and stairs, sagging and warped floors, cracked plaster, draughty or rattling windows and doors. Undersized framing materials, lack of trussing and bracing, and improper and bad practices in construction

are all hidden behind the plaster, but they show up in the conditions just given. The results of these construction short-cuts are quick depreciation, high repair costs, excessive costs for heating, and low resale value. As a business proposition it is cheaper to build a good building than a poor one, for a good building must have in its design efficient planning, the right material, and sound construction. All of these are gained when a competent architect handles the building operation.

A competent architect can also plan for maximum beauty and utility. He designs for harmony and proper proportion that produce attractiveness and pleasing appearance and he plans for efficiency and economy of space, all of which leads to desirability for purchase or rental. These conditions increase the valuation of property, give it a permanent and added market value, for in the final test they have much to do with the sale value. It is a recognized fact that the architect can produce the best building possible that can be built for the money available for its erection.

The architect is an artist, the contractor an artisan. The architect can take the same materials and space that the contractor would use for a common structure and create, without increasing the cost, a beautiful building with inviting appearance and an irresistible personal appeal.

Take your problems to him and he will advise you, help you with your plans or offer his own and evolve from your ideals a building which will be a joy to you—and a credit to your community.

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HOTEL COIT, OAKLAND, CALIFORNIA
Leonard H. Ford, Architect

COMMODORE APARTMENTS, OAKLAND, CALIFORNIA
Leonard H. Ford, Architect

LOBBY AND STAIRCASE, COMMODORE APARTMENTS, OAKLAND
Leonard H. Ford, Architect

Modern Fashions in Home Design and Construction

By ARTHUR L. LOVELESS, A. I. A., Seattle, Washington

THE tendency in modern home construction is away from the conventional. People are tired of the old conventional house. You know the kind—dining room on one side, living room on the other. This type of house has become stereotyped, ordinary, obsolete.

Now the home builder wants something new and he has two possible ways of getting it. One way is exemplified by the "jazz" house—exaggerated, bizarre, with its extremely pointed roof sweeping down to a little porch, with no sense of design, for design is proportion and this type of house has no proper proportion. It is bad—very bad indeed, but we must recognize in it a result of this conscious effort to avoid the ordinary. However, jazz houses themselves are becoming ordinary for they are being built in such numbers, one just about like the next, that they haven't even the redeeming feature of being unique any more!

And the second way of getting away from the hackneyed is typified by those homes which have originality but which achieve their effect unostentatiously. But it would be as difficult to give a "recipe" for designing that kind of a home as it would be for a cook to try to tell why a certain combination of ingredients will result in a pleasing concoction. Formula, or sameness, is just what we are trying to avoid in meeting this modern tendency in building and if one were able—which, of course, one is not—to give an effective "recipe," this recipe would cease to have originality as soon as it were followed.

In the Northwest two types of architecture are particularly notable—the English and the Spanish. The English strikes me as being best adapted to the needs of this country—our climate and that of England are so much alike that the English architecture is almost ideal for us. Featuring as it does large groups of windows, it enables all the sunshine possible to penetrate into the rooms. We need, not air so much—but plenty of light.

The Spanish with its great wall surfaces and few windows is really not quite as good for the Northwest as the English but it is finding its place too, and while a little better suited to the climate of Southern California where they have so much sun they can afford to shut out some of it, it is undeniably attractive and is bound to bid for popular favor.

With reference to the use of various building materials, cement stucco, which is really nothing but cement and sand on a brick base, will wear excellently. But the common practice in cheaply constructed houses is to use adulterated stucco—lime mixed with cement—and a wood lath base. No wonder it cracks! Galvanized metal lath, hollow tile and brick all make ideal bases.

As type of design varies, so the choice of building materials shows wide variety. Cast stone is beginning to be seen in residences and will come into use more and more for not only does it provide a wide range in selection of color but it also fills a need felt here because of the lack of natural stone. This part of the country has almost no native stone supply. Think how few stone houses you see, and those that do exist are for the most part veneered stone. This cast stone, then, is one of the newer building materials in residence construction and many of the older materials are finding new uses.

In certain types of houses like the Spanish and Italian, there may be almost complete absence of wood in interior treatment—that is, of course, as far as paneling, molding, etc., go—and here texture plaster may be used effectively, the walls having the appearance of masonry. Ornamental iron fixtures play an important part in this scheme of things. The walls themselves may lend warmth and color by a blending of two or more coats of paint.

Windows are not just the plain unadorned plates of glass they used to be. No longer are they merely something to look through. They have become things of beauty and are now discovered in many odd and unusual shapes and uses. The arched top window and the leaded, casement windows are popular contenders for honor.

Ceilings are more often coved or arched than straight these days. Anything to avoid the stiff or commonplace.

Which, when all is said and done, leads to the conclusion that as in the realm of fashionable attire, good taste in houses today means, besides the necessary proportion, a studied informality, individuality and an ensemble effect attained by careful and harmonious treatment of detail.

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Preliminary Studies of Proposed County-City Hospital Project in Seattle

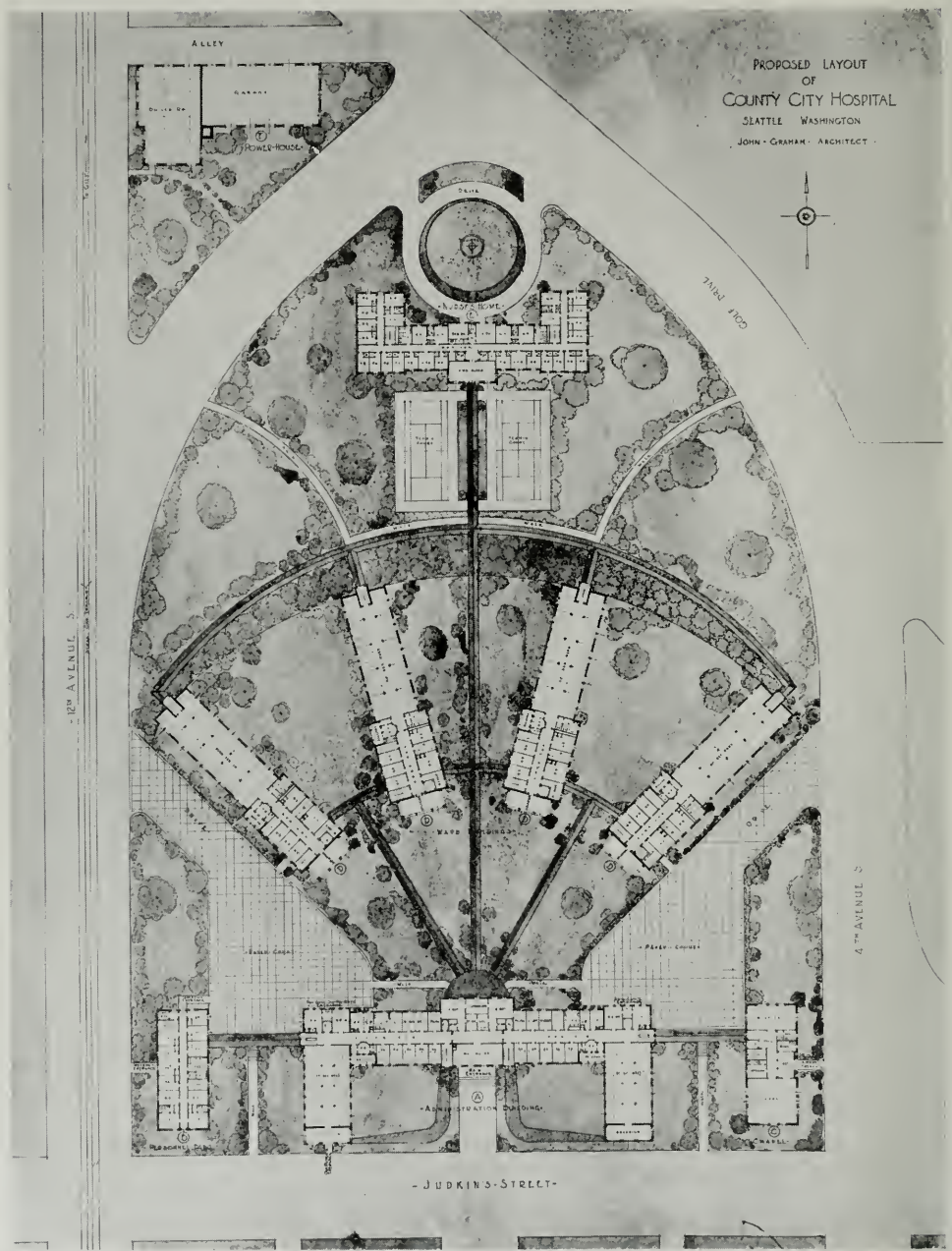
THE City Council of Seattle, Washington, and the Supervisors of King County in the same state, have joined in a movement to build a hospital that will be second to none in the West. They have the cooperation of the King County Medical Society, which secured the services of Architect John Graham to work out a plan intended to take care of present needs and those of many years to come. The tentative plans have been developed with an eye to practical efficiency, the arrangement of wards, waiting rooms, offices, laboratories, surgical wards and operating rooms being designed to expedite and economize the proper care of patients. Architect Graham designed three hospitals built in 1924 at a cost of approximately $2,000,000. These are the St. Peters Hospital, Olympia; Providence Hospital, Everett, and the St. Vincent Home for the Aged, West Seattle.

The group plan is very adaptable to progressive construction. Only such units need be included in the initial program as are deemed essential to present needs.

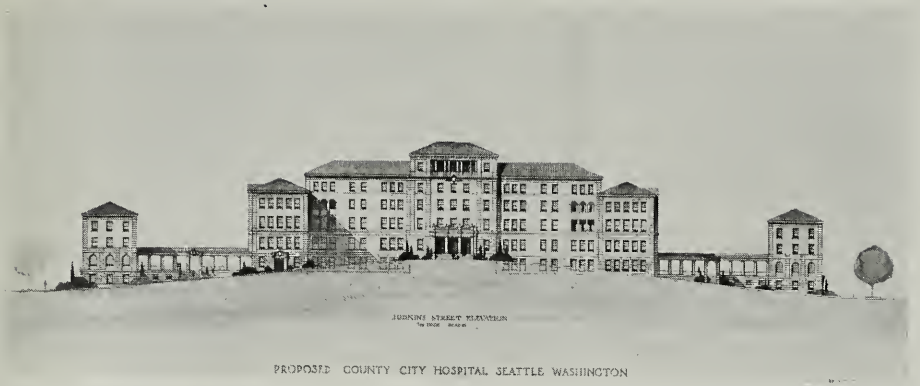
The various units are placed in geometric relation to the main building to which they are connected by means of enclosed passageways. By this arrangement direct communication is obtained; ward units receive full benefit of day and sunlight and a magnificent view to the north is preserved which would necessarily be obstructed were they directly connected.

An extensive operating department is placed on the top floor of the main unit, becoming the highest point of the group. The resulting north exposure is considered essential for major operating rooms. Surgical wards occupy the two floors below. In this building are also located the administrative departments, culinary departments, internes' quarters and personal infirmary.

A separate building is devoted to psycopathic patients, with an isolation department having a separate entrance on the top floor. A corresponding building houses the chapel, morgue and autopsy amphi-



PLOT PLAN, COUNTY-CITY HOSPITAL, SEATTLE
JOHN GRAHAM, ARCHITECT



theatre. The upper floors contain extensive laboratories for analysis and research. Provision is also made for a pathologist's office and library and an animal department.

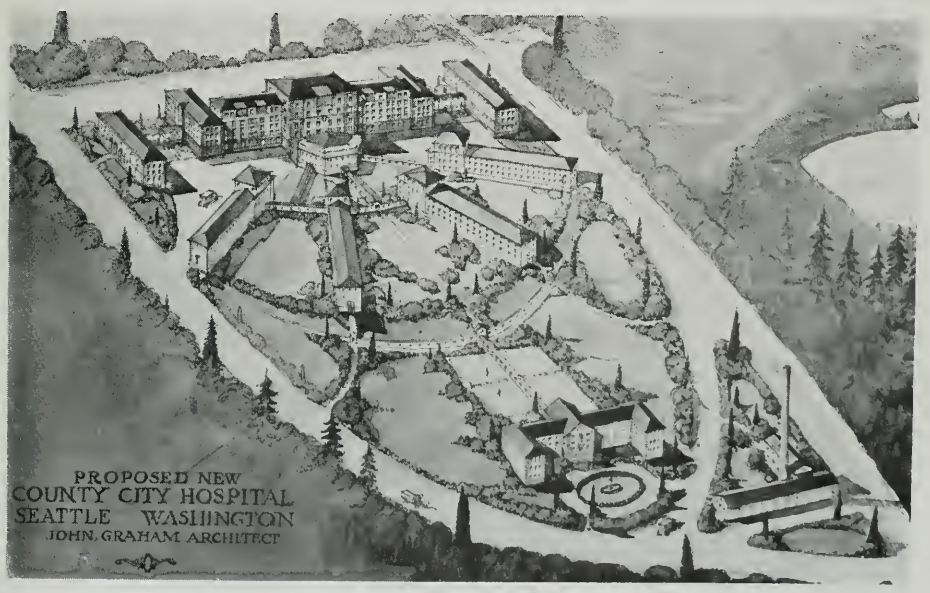
The ward units are so planned that all floors are independently operated and supervised. This makes possible absolute separation of patients into groups of like cases, with a corresponding gain of efficiency in supervision.

This institution can be planned so as to care for a proportionate number of pay patients, thereby becoming partially self-supporting. This would undoubtedly fill a long felt want for those without means to pay full price for private hospital service.

With an eye to the recreative and psychologic benefits derived, the nurses' home will be entirely separate from the hospital proper.

The nurses' home and the heating plant will be built at the time the main building is constructed, under tentative plans.

The entire site will be attractively landscaped, making the institution, with the marine and the mountain view to be obtained, one of the show places of the Northwest.



GROUP PLAN, PROPOSED COUNTY-CITY HOSPITAL, SEATTLE
John Graham, Architect

Registration Law Enforcement

By WILLIAM P. BANNISTER, F. A. I. A.
Chairman, Committee on Registration, The American Institute of Architects

"WHEN will the law be enforced?" "Why don't 'they' enforce the law?" "How is it that so many persons not architects, file plans with the Departments?" "Why cannot something be done?" "This city is full of persons who, unlawfully, call themselves architects."

Every State Board of Architects has these questions to answer although it may be a fact that every reasonable effort is being made to bring about strict enforcement with a reasonable amount of success. While State Boards are not policemen and their obligation extends only to the ascertaining of the fitness of an applicant who seeks the right to use the title "architect," still the Boards do act in every case of alleged violation which is brought to their attention. In doing this they do not broadcast the names of those compelled by law to desist from unlawful practice. They are not seeking political advertisement built up on the misconduct of foolish persons or those utterly lacking in moral purpose. The fact is that in every state in which there is a registration law the law is being enforced to the full extent of the knowledge of the authorities as to the violations. Some of the societies of architects are doing splendid work leading to enforcement. Other societies appoint "Committees" which never act unless some flagrant violation affects the business interests of some person or persons in the association. But the fact remains that the work of enforcement that has been accomplished has been with the assistance of societies of architects.

The questions quoted at the beginning of this article are absolutely worthless as a means of accomplishment. Everybody knows that nearly every law is being violated by somebody each day. What the police authority of the state needs to know is who is violating the law. There are societies that appreciate the proper method of approach. They submit lists of those whose right to use the title "architect" does not appear as a matter of record; the obligation to ascertain whether the title is being used lawfully rests with the state. These societies do not charge a person with violation of law; they simply call for investigation. An example of this good work has been by an association in one of our smaller cities in population but large in intelligent effort for good government. The names of six persons were submitted by this society as persons practicing without record; no charges were made. Investigation proved that three of the six were within the law by virtue of constitutional right. One was registered subsequent to the publication of the official list by the state. One claims the right by virtue of incorporation prior to the passage of the law. The sixth case is involved in an unfortunate mixup due to careless presentation by counsel. That society has done a good work in clearing up the situation in its community even though nobody was sent to the chair.

Another virile organization has presented a long list of unrecorded architects and those who are not lawfully called architects. This list has proved of great value to the state and has led to the preparations necessary for a judicial review. If violation of statute is found punishment will surely follow, but it must always be borne in mind that folks are not deprived of their liberty without having their day in court. Publication of charges until proven might lead to injustice and actual damage to the welfare of the persons involved.

Architects are not exceptions in having that human failing to ask "Why don't 'they' do so and so?" Many of them do not realize that they are the "they;" that it is their responsibility. When a crime of any kind is committed it does not follow that the police have any knowledge of the crime until it is reported to them by the victim of the crime or witnesses thereto. An architect cannot avoid this responsibility; he does not care to be a "tell-tale" and he has a dread that he may be called upon as a witness, or that he may arouse the enmity of some person. As a method of procedure he should present the case in mind to a society of architects; if he does not belong to one he should associate himself with some organization at once for it is true that he reaps the benefits of the works of these organizations without having sown one seed. When he joins he should seek to give and not to receive. If he presents his complaint through such a channel he is handing it to those who have more courage than he. In any event he need have no fear that he will be called as a witness for the proof of such violation of statute rests in the published act of the alleged offender.

Architects are, as a rule, a peculiarly well informed class and generally of intensely interesting personality. They seem to have some weaknesses, however, which appear to be a part of their relation to the community. This attitude as to "they" is a natural result of concentration on the involved problems of their occupation which closes their minds to things political or involved in statute. This is equally true of those engaged in other professions such as medicine, dentistry, etc. But in the case of the architect it is more a condition of mind than in other occupations because he does not carry out his vision or ideal by his personal act; of necessity he delegates the erection of his structure to the builder. He cannot produce his conception as does the sculptor or painter. Somebody else does that for the architect as far as possible, and the usual compromise appears in the result. Thus "they" becomes a factor in the life of the architect. He is prone to pass responsibility to others from the necessity to his occupation, but in passing responsibility he unfortunately passes power with it. He soon finds that he is trailing the builder who accepts responsibility with the power which goes with it.

Many persons engaged in professions let their obligation to themselves and their brothers in the field of their efforts, pass to police authority. Unfortunately this attitude toward government extends to most people. A government, just like a builder, accepts power and responsibility which should rest with the citizen with the result that autocracy, tyranny and despotism thrive in the soil of delegated power. A law regulating the practice of architecture has but one constitutional reason for being on the statute books and that is, the protection of life and the health of the community. It is enacted for that purpose alone and not for the pocket-book of the architect. It is true that many engaged in the professions feel that such regulatory laws are for their financial advantage as a result of the reactions, but if government is to intervene for any such purposes it cannot stop at the professions and if it does so intervene it means a despotism which might be good if those in power were truly altruistic, but the history of mankind has thus far shown excessive power in government to be the ruin of every nation that civilization has ever known. Architects owe it to the community to take the burden of enforcement upon themselves and to forget the pronoun "they." If the architects need advice as to procedure

under the law, let them ask their brother architects on the Boards for it.

There are certain fundamentals of law which should always be in the minds of those who seek enforcement of statutes having relation to professions. For example: It may be that a law which would prevent any person from making plans for his own building would be against the basic law; this has not been ascertained. If it does violate the basic law the condition still remains that the results of the labor of the owner may imperil the lives of others. It is a difficult problem and has thus far limited the scope of most of the registration laws to what amounts to a copyright to the title "architect." Anyone may advise another person to take this or that concoction for his or her ailment and if such adviser does not accept a fee for such advice, the law of practice is not violated. Likewise any person may treat his or her ailments with drugs lawfully obtained without violation of the statute. A person may act as an attorney at law in his own case just so long as the Justice may put up with his lack of knowledge of the rules of evidence. This rule of protection of fundamental human rights might easily be invoked in relation to any statute contravening. Thus while we have statutes limiting the use of title the step to one limiting practice is a long one; but in principle seems to be justified. In the State of New Jersey this is a very live question. The failure to solve it by statute is serious in its results as relating to public welfare and the practice of the profession.

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Painting Specifications and Their Relation to Results

By W. C. WOODYARD, in American Architect

PROBABLY no profession today requires greater versatility than that of the architect. He is, necessarily, a combination of the decorator or artist and the engineer. Lack of success is due to failure to maintain the balance. In addition, he must be a business man of the highest type, often a financier. He must also have within his make-up the qualities of a lawyer, and the ability to write a contract or specification which will put into effect his intentions.

It is this phase of the architect's work, the writing of an effectual specification and contract, which must be given first consideration in any endeavor to analyze the causes for unsatisfactory painting work. Of equal importance is the matter of proper superintendence.

Information gathered from a questionnaire on the painting problem that was sent out by The American Architect to five hundred architects, revealed that " a large majority experienced greater dissatisfaction and encountered more dishonesty with the painting contractor than with any trade with which they had to deal." This might logically indicate that painters as a whole are totally lacking in conscience and integrity. But is it fair to assume that one group of workmen coming from the same strata of life as another group of workmen in another trade should have standards of integrity totally dissimilar? It is true that no other trade offers the same opportunity for the practice of dishonesty. A certain grade of hardware, plumbing or radiation may be readily identified, but a cheap floor varnish may have just as good a shine as a better grade, and it is frequently a matter of weeks before the deception is discovered. This is the more reason why the architect should throw up

more safeguards in the specifications and superintendence, not only to protect himself and client, but to protect and encourage the honest contractor who often finds it difficult to survive in competition with the unscrupulous.

The painting problem is governed by the law of cause and effect, and we may properly concern ourselves with the factors which operate to produce results and those which invite deception.

One factor, always disagreeable to the architect, is the necessity of revising figures downward to conform to the amount of money allotted for the project. Painting work, being perhaps more flexible than other items entering into construction, is always an object of attack. An architect may have had, at the outset, an adequate specification and may have secured fair figures from painting contractors, but have the shaking down process nullify the whole effect of his specifications. Usually he states his difficulty to the low bidder and secures a substantial reduction. Under the circumstances, the architect feels obliged to assent to concessions regarding approval of other brands of material. Unconsciously he finds himself increasingly at a disadvantage; he is less vigilant in superintending and feels some reluctance in forcing issues. As a result, there is frequently painting grief which ultimately places the architect in an unfavorable position. The painter, with this leeway, very often makes a greater profit than he stood to make with his original bid. It is a certainty that the decrease is not going to come out of his own "hide."

If it is imperative to reduce painting costs, the solution lies in intelligently revising the specifications. Coats may be eliminated in some instances, and labor costs, which are the big item, reduced by the use of dull varnishes and eggshell enamels in place of rubbed finish. Still greater reductions may be effected by eliminating certain portions of the work not absolutely essential to the finished job. In no instance is it desirable to use cheap grades of material or write a more open specification. The best grade of paint or varnish is the cheapest and safest; and when the work is to be done at a reduced cost, there should be the most careful definition in the specification, perhaps more than at any other time.

Many architects who understand the writing of specifications for an A-1 painting job, readily admit their inability intelligently to cut down on the method of finishing. Efforts in this direction often result in the elimination of very essential coats, such as the coat of shellac which prevents certain types of stains from bleeding through. One coat of eggshell enamel is frequently specified over two coats of undercoating, with the result that the oil in the enamel is absorbed by the undercoating; the work is blotchy and loses all the essential characteristics of an enameled job.

How may an architect approach this problem most intelligently? It requires greater discretionary judgment, as well as a more involved knowledge of finishing, to cheapen by a change of specification than it does to write for an A-1 job. Frequently his own knowledge is not adequate. The most reliable and the safest source of information is undoubtedly the manufacturer's representative. He of necessity is proficient in all phases of finishing, and is better able to determine to what lengths it is advisable to go. Very often the same result may be obtained by a cheaper method. He is not doing the work himself, has no

axe to grind, and his only interest lies in seeing the best possible results secured.

There are other evils attending the painting problem directly traceable to the specification. The practice of re-using old specification forms for different types of buildings without regard to their adaptability and without intelligent alteration, hardly merits consideration. This indifference frequently leads to a vague conception of what is desired and a wide range in estimates. It affords an unwarranted temptation to the unscrupulous contractor, is unfair to the conscientious contractor, and is not a businesslike manner of contracting for services or spending the client's money.

Specifications should be adapted to the class of work to be done. We do well to stop and picture the reaction of contractors bidding on a five coat, rubbed enamel job for an inexpensive apartment building, the specifications for which have been taken from a fine residence the architect has previously built. One contractor may figure, by hook or crook and a little luck, to get away with three coats. By the inadequacy and inappropriatness of the specification, this contractor may estimate his chance of evading the specification. Another contractor, sizing up the building, its location and possible rents, may estimate that a fair figure should be based on a four-coat eggshell finish. His figure would be based on a fair appraisal of the finish which this job should have, and his action is within reason. The third contractor, equally anxious for the business, who is desirous of creating a reputation for doing work according to specifications, and who smarts under the accusation that all painting contractors are dishonest, is left out of consideration. This example represents an actual case, although it may appear a bit unusual. It tends, however, to illustrate a point that may not occur to the architect, which is that specifications sometimes actually foster dishonesty in painting contractors.

The specifications should be appropriate for the job, adequate in scope, and explicit in definition. It is a contract and therefore it should not be vague in its meaning. A wide latitude in a contractor's estimates indicates either a failure to carry out these principles in writing the specification or a flagrant intent of one or more of the contractors to skin the job. If an architect writes a carefully defined specification, which the contractor knows will be rigidly enforced, the estimates are likely to be fairly close. His only interest in a bid is the results which it represents.

Usually, however, with adequate superintendence, the matter of the number of coats may be checked on the job. The most common and the most disturbing factor to the architect is the use of a much cheaper grade of material than that intended by the specification. It is true that if there is substitution the next grade of material is seldom used, but more likely the cheapest grade of varnish, paint or enamel that can be bought is used to make the risk of saving on material worth while. The unscrupulous contractor may figure, as is often the case, that the job will be finished and he will have his money before it starts to go bad. Suits are then often threatened, and sometimes gone through with. Rarely is anything accomplished as the proof is too difficult.

Little need be said in this article regarding the selection of materials to be used, as this is not usually a source of difficulty. The trouble does not lie in the selection of a satisfactory material, but in getting

that material used. It is perhaps well to know that chemical analysis of varnishes, for example, reveal little, owing to the fact that the original constituents lose their identity as a result of the high temperatures to which they must be subjected in the cooking process. The durability of a varnish is due partly to the selection of the ingredients, but more to the treatment of the materials, especially the cooking or heat treatment. Two manufacturers using the same materials and what appears to be duplicate procedure, turn out different products; likewise two manufacturers with different materials and different processes produce products with somewhat similar qualities. The selection of a material is therefore, best based on its reputation for performance and the actual service which it is known to render.

Various methods are practiced in specifying materials. Some specify a number of brands or equal; some confine the selection to two or three enumerated brands; others specify one brand or equal and still others specify one brand and insist on its use. While different brands of materials will give varying degrees of service and there is not an exact equality as it is often assumed, it may be argued with reason that it is desirable to leave the selection of material open to competition. As this question is vital to the comprehensive consideration of the painting problem, it is well to consider the human aspects and reactions to an open specification. Many contractors, on encountering such a specification, immediately speculate on what they will be able to get away with by using cheaper material and likewise on what their competitor is likely to do and then base their figure accordingly. It is evident that the contractor who is desirous of living up to the full intent of the specifications becomes discouraged, which naturally leads to a lower standard of contracting for painting work.

The manufacturer's salesmen, representing the companies mentioned, under these circumstances are of no assistance in securing the use of the material intended. If the contractor is desirous of substituting cheaper material he may easily dismiss the salesman, whose goods are included in the specification, by saying he is buying one of the other specified products, and each in turn is treated similarly or given a small order taking care of only a small proportion of the requirements. Knowing the contractor and the kind of goods that he is likely to be interested in, it is only human that he offer the priced goods which will interest him. Many manufacturers take advantage of this situation by placing their names on their very cheapest as well as their better grade goods in order to make their proposition more attractive.

Regardless of which method the architect may prefer to use in specifying materials, he should specify either outright the material desired, which is less open to substitution regarding the grade of material, or at least so word his specification as to reserve to himself the ultimate selection of the material at the time of the signing of the contract. The material to be used should be written into the contract, without being subject to change and the superintendent of the job be advised of the decision.

The questionnaire sent out by The American Architect on the painting problem, mentioned earlier in this article, asked for suggestions which would assist in correcting the painting problem. The following is quoted from this questionnaire and answers: "The most common suggestion was that the manufacturer have his organization so arranged

that when an architect specified his product (or his product has been selected) he would know of it, and that his representative would follow through to see that sufficient material was purchased by the contractor for the job and that the material was used properly on the job."

This is not a solution in itself, and is only feasible and dependable in part. The specifying and superintending of painting work is a function of the architect and his organization. He may hope, however, to augment his efforts, by making it possible for the manufacturer's representative to know when his goods are to be used, and to follow through to see that sufficient quantities are purchased to do the job. A salesman should be, and those representing reputable houses usually are, as much concerned in the securing of creditable results as is the architect. They, of course, are more familiar with the whole problem than the architect and are in a position to render valuable assistance. They have a pretty good idea of the quantity of material required to do a job properly and the methods of securing results. If their services prove dependable, an architect may use them advantageously to supplement his efforts.

It is well to consider in this connection the objection often offered that a manufacturer will use an expressed preferment of his product to hold up the contractor on price. Any claims of this sort should be quickly investigated, as any concern of any standing or with any hopes of a sustained business could ill afford being a party to such practice.

It has been the intention of this article to point out the outstanding causes and remedies for unsatisfactory painting work that has become such a burden to the architect, rather than to offer a comprehensive system of writing specifications, which is a part of the architect's elemental training. The problem is not as futile as it appears to many; it merely means the application of more precautions in the matter of writing specifications and the adoption of a strict system of superintending.

As suggested at the outset, an architect's efforts are becoming increasingly diversified. Under the pressure of building cathedrals of commerce, which are sent towering to the skies within the expanse of months, small details of policy are lost sight of until the effect becomes irritating. The Cathedrals of Worship of the early ages, which were scores of years in the building, are still to us a vitalizing source of aesthetic inspiration, and in our calmer moments of thought taken from the turmoil of activity, we come to feel the need of more of that spirit of building well as,

"In the elder days of art,
The builders wrought with greatest care
Each minute and unseen part,
For the Gods see everywhere."

* * * *

Building Craft Wages Twenty-Five Years Ago

All of the building trades in Chicago were working under the scale of wages adopted by the Building Contractors Council April 24, 1900. The bricklayers, plasterers and the mechanical trades all received $4.00 a day, the carpenters rate was $3.40 along with the sheet metal workers; the iron workers received $3.60 a day, ornamental iron workers getting $3.20 per day, the painters and gravel roofers received $3.00 a day and the laborers $2.00 a day. This was the same rate of wages paid to organized labor during the year 1899.

PATIO, HOUSE IN PALO ALTO
BIRGE M. CLARK, ARCHITECT

FIFTY-SECOND STREET ELEMENTARY SCHOOL, LOS ANGELES
A. M. EDELMAN AND A. C. ZIMMERMAN, ASSOCIATE ARCHITECTS

Awarded Certificate of Honor by
Southern California Chapter, A. I. A.

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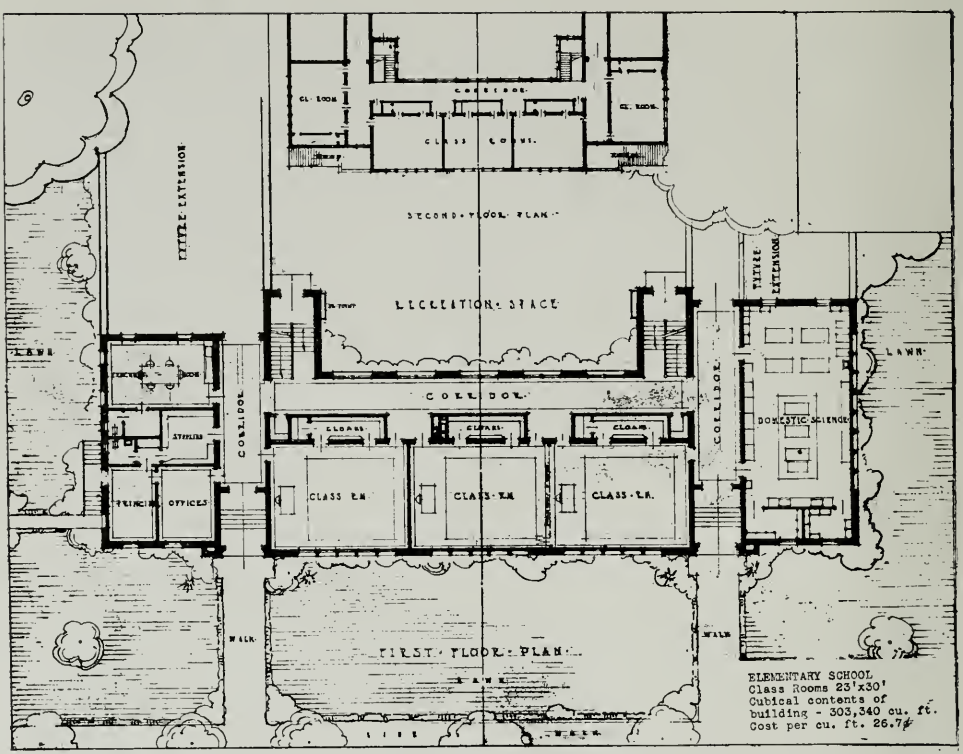
FIFTY-SECOND STREET ELEMENTARY SCHOOL, LOS ANGELES
A. M. EDELMAN AND A. C. ZIMMERMAN, ASSOCIATE ARCHITECTS



PLAN, FIFTY-SECOND STREET ELEMENTARY SCHOOL, LOS ANGELES
A. M. Edelman and A. C. Zimmerman, Associate Architects
Awarded Certificate of Honor by Southern California Chapter, A. I. A.

Comparative Costs of Operating a Gas and an Electric Apartment

COST of operation is the specter which stands in the way of complete electrification of many homes. Despite the advertising dollars of the industry that have been spent to tell the public that electricity for cooking, for heating and for water-heating is more convenient, more satisfactory and no more expensive than other types of fuels, the idea remains that an electric home is an expensive luxury. Fully half a million people have visited the electric homes which have been displayed in the Western states, yet this idea persists. They are sold thoroughly on the various small appliances — the iron, vacuum cleaner, washing machine, percolator, toaster, waffle iron and other devices, and they are ready to believe that electricity is more desirable for the major household uses than other types of fuel on account of its dependability, cleanliness, efficiency, and ease of control, but they hesitate at complete electrification on account of the fear of high bills.

A comparison of the cost of fuel in the completely electrified apartment of Mr. George C. Tenney and a similar sized apartment in which gas was used for cooking, water-heating and house-heating for the same number in the family, compiled by the Journal of Electricity,

shows such is not the case. In fact, the figures over the same period of time show a relatively small difference when the arguments in favor of electricity are considered.

TABLE NO. 1—Cost of Operation of Electric Apartment

Meter Reading Date	Kw.-Hr.	Amount
1923		
April 3	614	$ 16.24
May 2	628	16.31
June 2	479	13.33
July 2	391	11.57
August 1	253	8.81
September 1	195	7.65
October 2	246	8.67
November 1	273	9.21
December 3	434	12.43
1924		
January 3	562	$ 14.99
February 1	584	15.43
March 3	450	12.75
April 2	269	9.13
May 2	401	11.77
June 3	84	3.99
July 2	174	7.14
August 2	374	11.23
September 2	420	12.15
October 2	278	9.31
Totals	7,109	$212.11

Average monthly consumption ..... 374 kw.-hr.
Average monthly bill $11.15
Average monthly bill, July 1, 1923, to Aug. 1, 1924, (period similar to gas apartment) $10.07

The electric apartment consisted of four rooms. There were installed a 6-kw. range, 7 kw. in air heaters, a 5-kw. water heater and 6 kw. in lights and miscellaneous appliances, including a vacuum cleaner, two percolators, a waffle iron, a grill, a toaster, two irons, a radiant heater and other small appliances. There were three persons in the family. The rate applicable was the C-1 B-1 schedule of the Pacific Gas and Electric Company.

The gas apartment was chosen at random from the accounts of the Pacific Gas and Electric Company, the only conditions being that there should be the same number of rooms, the locality in San Francisco should be approximately the same and there should be the same number of persons in the family. The gas equipment consisted of a four-burner cabinet range, a gas water heater and a gas-fired furnace with four radiators. Electricity was used for lighting and for the operation of a few small appliances.

The monthly bills for the electrified apartment for the period March 1, 1923, to October 1, 1924, are shown in Table 1. The bills for the gas apartment for the period from July 28, 1923, to July 21, 1924, are shown in Table 2. The entire fuel bill in the electrified apartment over a period of nineteen months was $212.11 or an average of $11.15 for 374 kw.-hr. of energy per month. The average bill over the same period as accounts are available for the gas apartment was $10.07. The difference is explained in the fact that the high bills of the first three months, when experience was being gained in the regulation of the electric heaters, are not included in the later period.

TABLE NO. 2—Cost of Operation of Gas Apartment

Meter Reading Date	Gas Bill	Electric Bill	Total
August 24, 1923	$ 4.56	$ 1.27	$ 5.83
September 22	5.06	1.78	6.84
October 23	5.52	2.71	8.23
November 22	7.64	2.54	10.18
December 22	10.33	2.80	13.13
January 23, 1924	16.17	3.31	19.48
February 19	13.98	2.71	16.69
March 20	5.80	2.04	7.84
April 20	5.34	2.04	7.38
May 19	3.96	1.26	5.22
June 20	3.68	1.32	5.00
July 21	3.31	1.20	4.51
Totals	$85.35	$24.98	$110.33

Average monthly gas bill	$7.11
Average monthly electric bill	2.08
Average monthly total bill	9.19

For the gas apartment the average gas bill was $7.11 and the light bill $2.08 or a total of $9.19. The actual money difference in favor of the gas-equipped apartment is 88 cents. However, there are certain incidental charges that do not appear in the fuel bills. The added convenience of the electricity can not be measured in dollars and cents. Cleanliness can. At the end of nineteen months the walls of the electric apartment were as bright and clean as at the time the apartment was first occupied. At the end of twelve months in the gas-equipped apartment the kitchen was repainted and the walls of one room retinted. This is only one of the many intangible arguments which might be cited in favor of electricity.

* * * *

Just As Good

THE CREATIONS of an architect are his advertisements. The great public edifice, the magnificent memorial building, the beautiful mansion, the solid factory, the imposing hotel, the outstanding business block, or any one or all of the many other structures which serve the needs of modern man are the vehicles by which the designers proclaim their genius, ability, and craftsmanship. And, by the same token, they likewise constitute the mediums through which the public judge them, for they most truthfully advertise their professional merit or mediocrity.

That is also true of the manufacturer or producer of the materials, the fixtures, the supplies, the furnishings, the refinements, and, in fact, all else which makes possible the completed structure, representing the physical existence of a designer's skill.

But unlike the outstanding bulk of the finished building, the materials and things with which it was constructed are so subordinated in the assembled whole as to largely lose their distinctive identity. In reality, many essential factors are encased within the walls and other portions of a structure, and are therefore dependent upon high quality and fabrication honesty for enduring service satisfaction.

That brings us face to face with the responsibility of those furnishing the various materials, fittings and supplies which enter into a building.

It may be true in some instances that the architect or the engineer is entirely competent to protect the owner from inferior materials and

workmanship. Doubtless every architect and engineer believes himself possessed of sufficient knowledge to do just that very thing, but it is nevertheless unfair to the owner, for—a little knowledge is a dangerous thing.

That any one man is a skilled expert in every line and entirely qualified to judge and pass upon every single item which enters into the construction of a great edifice is preposterous. It can't be and is not true, any more than the landscape engineer is a Burbank, the electrical dealer an Edison, or the engraver of a bank note a Morgan.

Within the confines of even a modest home, to say nothing of a huge factory, hotel, hospital, school, church, business block, store, or library, there is assembled the handiwork of many specialists. That is evidenced in paints and varnishes, in heating and plumbing systems, in electric light fixtures, in hardware and window glass, and in all other things from foundation walls to roof peak.

Of course the efficient architect or the trained engineer possesses a sufficient general knowledge of building factors to enable him to correctly work them into his design or plan. He can figure structural strength, stress, and load. He visualizes artistic effects. He perceives symmetry of bulk and harmony of form. He deals with mass and proportion. He arranges color, guides light and shadow, and grasps the requirements of utility. In all those things he is a master craftsman.

But he should, and he does if he is conscientious and wise, rely to a very large extent upon the experience, the skill, the specialized knowledge, and the proven trade dependability of those who shape, fabricate, and supply the things he needs to transform his plans into physical reality.

And when it comes to that, there is normally but one safe road, and that is—the specification of nationally advertised products, for no article, device, or material lacking dependable quality of proven worth, honestly priced, can weather the analytical discrimination of an exacting public for any length of time, and the immutable law of sound economics quickly eliminates it from the confidence of buyers.

Only things of established merit are, year in and year out, found in the list of advertising, either national or local. Do not take a chance with the unknown "just as good." If it is worthy of your confidence and your client's money, it will be advertised extensively and continuously.

Certainly architects and engineers who are advertised by the execution of their plans in brick and steel, wood and stone, paint and lumber, bronze and glass, etc., should be most willing to support the advertised products which make for stability and satisfaction. Consistently advertised goods mean quality insurance, eliminating the hazard of inferiority. Specify them.—Michigan Architect and Engineer.

* * * *

Crocker Bank to Build Eleven-Story Addition

The Crocker National Bank of San Francisco has commissioned Architect Louis P. Hobart to prepare plans at once for an eleven-story Class A addition to the bank's building at Market and Post streets, San Francisco. The entire ground floor fronting 83 feet on Post street and 66 feet on Market street, will be occupied by the bank, the upper floors to be arranged for offices. The building will cost $1,000,000.

Steel Construction

By LEE H. MILLER, Chief Engineer,
American Institute of Steel Construction, New York

The basic reasons for the development of the Standard Specifications for the fabrication and erection of structural steel, with an increase in the working stresses from sixteen to eighteen thousand pounds, (provided for in a new ordinance recently adopted by the San Francisco supervisors) are explained by Mr. Lee H. Miller, chief engineer of the American Institute of Steel Construction, in the following paper. Mr. Miller's presentation of existing conditions in the structural steel industry, and the work being done by his organization for the improvement of methods and standards is of live interest to every architect, engineer and builder on the Pacific Coast.

THE subject of steel construction is so diversified that all its phases cannot be even touched upon in one paper. The growth and utility of improved forms of material, the operation of labor-saving tools and methods in the fabricating shop, all are important; but this paper does not attempt to treat the subject from more than a general standpoint. The members of the American Iron and Steel Institute are directly affected by the welfare of the structural steel industry.

It is proposed to present a brief survey of the growth of steel construction from its inception forty years ago; to try to locate such factors as seem to be responsible for its somewhat arrested development during the past ten or fifteen years; to describe certain ameliorative steps that are being attempted; and to indicate what improvement has already been accomplished. Special reference will be made to steelwork for buildings and similar structures.

The phenomenal developments that accompanied the replacing of iron by steel may be said to have started about the year 1885 when the Bessemer process began to make possible the commercial production of rolled steel in the form of shapes and plates of a grade and in tonnages suitable for use in buildings, bridges and other structures. Within less than a decade the completion of the transition was recognized by one of the leading steel mills which announced in its 1893 Pocket Companion that all data relative to wrought iron was then being eliminated.

The influence of the mill handbooks was far reaching. The building codes of many cities adopted their working stress of 16,000 lbs. In many colleges these handbooks are still utilized as text books. Their compilers did a great piece of work, well suited to the conditions then existing, and all honor should be given them.

In addition to the assistance rendered by these mill publications, it should be noted that, while some building steel contracts were taken by bridge shops, and some by the more enterprising of the rapidly evolving architectural iron works, very considerable tonnages of structural steel in fabricated form were furnished by the mills, who thus retained direct contact with the needs of the industry. Under this guidance, the use of fabricated structural steel in the United States grew from an estimated yearly consumption of a quarter of a million tons in 1892 to one and a half million tons in 1912.

It may not be without significance that for some years prior to 1912 the rolling mills had been gradually withdrawing from the field of fabricated material, and this field was becoming more and more the special domain of the shops. It is also to be noted that about this time

*Extracts of paper read before the American Iron and Steel Institute, May 22, 1925.

new forms of structural shapes were being introduced by individual mills, and changes in unit stress and formulas were being increasingly advocated.

In recent years there has been no uniformity as to the proper working stress on which designs should be based. It has been generally realized that the old 16,000 lb. basis, including as it did a generous "factor of ignorance," was now unnecessarily conservative. Since its original adoption conditions had changed. The steel itself was being made by better processes and with greater care, from furnace to finishing mill. Its chemistry and ductility were being improved. Its dimensional tolerances were more closely checked. Its inspection by both mill and customer was much more rigid. Its grade had become standardized under the specifications of the American Society for Testing Materials. It was a more reliable product. In addition, the art of applying the steel to its varied uses was no longer a new one. A large body of designers and erectors had become trained by experience in the problems that attend steel construction.

The consequent increased confidence in both material and its application was naturally reflected in the use of higher unit stresses. Already 17,000 lbs. had become the usual basis in metric countries, and 17,900 lbs. in Great Britain. The old 16,000 lb. basis still governs the design of structures in certain American cities whose building codes had become crystallized, but elsewhere, and for practically all large bridges, higher stresses are being employed. There has been, however, no standard of conformity as to the precise value to be adopted.

In addition to the matter of the unit stress itself is the manner in which it should be applied. As was so tersely pointed out in a recent committee report of the American Society of Civil Engineers, it may be stated with confidence that early deficiencies in steel frame design are traceable to causes unrelated to the basic unit stress. The rare failures that occurred were invariably the result of faulty detail or insufficiency of lateral bracing. In the manner of application there has been, and still is, great diversity in practice as to connections and other details, as well as in the method and frequency of bracing each beam and girder or the reduced stresses that should apply where an owner's desire for unobstructed space may necessitate a partially unbraced framework.

But commercially the most unsatisfactory feature resulting from absence of uniformity in methods of design has been the opportunity it gave for securing unfair advantage, sometimes leading to less reliable structures, by an irresponsible reduction in quantity of steel to be furnished, or in plain language "skinning the job," under the protecting guise of some different code or formula. The legitimate advantage developed by a fabricator in the way of improved methods and workmanship in shop or field has too often been nullified by the absence of a common basis of design. Probably no fabricator could claim entire exemption from this practice, the effect of which is disastrous to any industry.

A second feature indicative of the need for recognized leadership is the exploitation of the advantages of structural steel. The producers of other materials, each of which has its proper field, have co-operated in campaigns directed at the enlargement of their market, but attempts to broaden the field for structural steel have been generally limited to

the efforts of individual manufacturers. As explained above, the technical basis of design has outgrown the rolling mill handbooks that were originally so helpful; but the colleges, whose students will largely control the future trend of construction, were not provided with any authoritative publication in which the new basis of design was standardized. They could not be so provided, for we have seen that the basis itself has been unsettled. The consequence, if not counteracted, must surely be an unduly limited demand in the future for structural steel material.

Realizing the need of united leadership, a considerable number of fabricating shops became organized two and a half years ago as the American Institute of Steel Construction. Since that time its membership has grown so that today it numbers 207, and includes many of the important structural steel fabricating concerns in the United States and Canada. Its activities are limited by its constitution and have the endorsement of the United States Department of Commerce. In all of its planned improvements co-operation is welcomed from the steel mills, consulting engineers, architects, and the public at large. A four-year program has been laid out looking to the betterment of the industry.

A Standard Specification has been prepared and published in pamphlet form, the purpose of which is to furnish simple standard formulas on which safe designs can be prepared, and thus to assist in the securing of contracts on a fair basis. This work was done by a committee of five eminent engineers and architects which included the engineering heads of two of our largest universities. The basic unit stress adopted was the still conservative one of 18,000 lbs., and this was safeguarded by adequate provisions as to its manner of application. Already thirty-one large cities in all parts of the country have approved the use of the Standard Specification in their building designs, including San Francisco, and its early adoption in other cities is confidently anticipated. It is also being widely used by individual engineers.

* * * *

A Plea for Better School Lighting

RECENT extensive surveys have shown that at least 25 per cent of our school children have defective eyesight. In the lower grades the percentage is less than this, but there are marked increases in the number and extent of eye defects as the children progress through their school life. Improper school lighting—both natural and artificial —contributes largely to this condition.

In a great majority of our schools the artificial illumination especially is inadequate or poorly distributed, and glaring light sources are all too common. Under such lighting in the schools—and with correspondingly poor lighting in the homes—the children do not see clearly, or else they strain their eyes in order to see. In either case they are studying under a serious handicap which cannot help but retard their educational progress. Furthermore, eyestrain among the boys and girls of today means impaired vision among the men and women of tomorrow. Widespread investigations show that at the present time over half of our adults have defective eyesight—many of us have indeed lost part of our birthright, either because we did not have good lighting, or because we have abused our eyes unnecessarily.

Aside from the enormous personal losses which result from imperfect vision, both during school life and afterwards, school lighting may

be considered as one of those cost items which must be so budgeted that maximum value will be obtained from the expenditure of school funds. Purely from this standpoint of the actual dollars-and-cents cost of operating our educational system, if poor lighting and the resulting imperfect vision prevent annually only two per cent of our children from passing, the cost to the state of repeating the year's instruction for these children is as much as its total school lighting bill for the entire year! And where poor lighting has caused eye defects among school children, in later life their earning capacities are thereby reduced, which in the aggregate amounts to an immense economic loss to them and therefore to the nation. Clearly, the **real** cost of **poor** lighting is stupendous!

Even where the value of good lighting is thoroughly appreciated, progress in improving school lighting conditions is seriously hampered because it is often the general impression that the cost of proper lighting is prohibitive, or nearly so. Yet the total cost of a good artificial lighting system for a school rarely exceeds the cost of the ornaments which are frequently placed around the front entrance. And the average cost of electric current and lamps to provide good artificial lighting in a schoolroom during the periods of insufficient daylight is less than the cost of the pencils and tablets used by the children in the room! Good lighting is indeed inexpensive, especially in view of its far-reaching benefits. If parents and school boards realized these facts there would soon be a marked improvement in school lighting conditions, for it is evident that the small expenditure for proper school lighting pays enormous dividends, both present and future.

The growing use of schools for night courses makes it doubly important that they have good artificial lighting, since the night classes are of necessity entirely dependent on artificial illumination.

For those who are desirous of obtaining proper lighting for any school, complete and authoritative information from an unbiased source is available. A new Code of Lighting School Buildings has recently been prepared by a committee consisting of official representatives of twenty organizations and societies identified with the school lighting problem in one or another of its various aspects. The American Engineering Standards Committee has approved this Code as the American Standard. It serves as a guide for the enactment of legislation on school lighting, provides architects with detailed information on which to base school lighting specifications, and points the way for school authorities to improve lighting conditions. Copies of this Code of Lighting School Buildings can be obtained from the Illuminating Engineering Society, 29 West 39th street, New York City.

* * * *

Overhead Expense

The average overhead expense of a contractor for conducting his business, outside of his cost of labor and materials is an important item in the make-up of his bid or charges for doing work and as such "overhead" amounts all the way from eight to fifteen per cent sometimes even more, according to the total amount of work done annually, that item must not be overlooked in the preparation of figures, on either contract or day work. Contractors seldom make as much as fifteen per cent profit on any job, and if their "overhead" is forgotten they will not be able to pay any income tax to Uncle Sam.

"Selling" Architecture

By TORRENCE FISKE in **Pencil Points.**

I WRITE frankly as a novice, having left a financial business less than two years ago for the study of architecture. If my ideas are not pleasing to some members of the profession they may be disregarded as coming from one who knows little of architecture. If they have value it is because ten years' experience in business and long residence in a middle western city, where architects starve and contractors flourish, have given me a critical layman's point of view.

There seems to be two major difficulties: the lack of a developed artistic sense among the people, and the failure of the architects themselves to win the confidence of the people by their performance. It can hardly be expected that a developed sense of beauty should exist throughout the greater part of our country. It is too new. In the West the pioneers are still living. Never in history have the arts developed without leisure and wealth. Time will change this, is changing it, but much can be done by way of education. * *

But I wish to speak of the second difficulty—the failure of architects to meet competition—for in the correction of this trouble are quicker and surer rewards.

Why is it that the contractors get the business? Because they are better salesmen, better business men, and solve their problems in a more practical way. They operate on common sense and they work in three dimensions. They can discuss intelligently with a prospective builder the economies of plans, the relative merits of different types of construction, the rental situation, insurance, the business outlook and the political situation. They are short on theory and long on experience. True, they seldom have a developed artistic sense but the qualities they have bring them to an understanding with the intensely practical people with whom they are dealing.

In the West there is a widespread feeling that architects are "theoretical" and "artistic," which terms, defined, mean impractical and unbalanced. Certainly the men of that profession do not command the confidence they should. Until this is remedied there will be little improvement in the architect's bank account or the city's beauty.

Sometimes a first impression is worth more than much later consideration. At any rate on my first arrival at the school of architecture the emphasis laid on rendering struck me as all out of proportion to the other values of the problem. After all, I thought, it is the building itself that is really going to count, and an architect said to me the other day, "The really big architects of the country are great because they **build** fine buildings, not because they **draw** them."

When I had bonds to sell the most efficient method I ever found to prepare a sales argument was to sell the security to myself. I can't help but wonder if the same system wouldn't work for an architectural problem.

The essence of architecture is beauty, and no true architect will argue otherwise. Yet in this age he must conform to the conditions imposed, which are invariably a most practical clientele and the hardest kind of competition, from alert, shrewd and competent, if not artistic, builders. This clientele is quick to appreciate a good building. Last summer the manager of the Montgomery Ward Co. plant in St. Paul showed me their new building with evident pride. "We are doing more business, and doing it cheaper," he said, "because of the splendid layout we have."

To gain the needed confidence of the public it is my belief that the architectural profession must make a fair-minded and searching study of its own faults, of the competition it faces, of the clientele it must reach, and trim its sails accordingly.

DAILY NEWS BUILDING, SANTA BARBARA
Edward L. Mayberry, Architect

Newspaper Building Only Slightly Damaged

ARCHITECT Edward L. Mayberry, 905 Transportation building, Los Angeles, who designed the Daily News building at Santa Barbara, illustrated above, writes that this structure received only slight damage in the recent earthquake. Mr. Mayberry states that he arrived in Santa Barbara soon after the 'quake and went at once to the Daily News building to ascertain its condition. He found that the damage extended only to some plaster work, hollow tile partitions and ornamental brick work. The reinforced structure itself was absolutely uninjured.

* * * *

Architects Design Many Theatres

Plans are being prepared by Architects Reid Bros., 105 Montgomery street, San Francisco, for the erection of a fireproof theatre building with stores adjoining, for Mr. Harry M. Seigler, to cost in the neighborhood of $250,000. The structure will be built at the southwest corner of Fillmore and California streets, San Francisco. This is the fifth theatre to be designed by Reid Bros. this year.

GARDEN, HOUSE OF MR. C. ALLEN TEST, PEBBLE BEACH
MILLER AND WARNECKE, ARCHITECTS

Engineer Comments on Recent Dam Failures

By M. M. O'SHAUGHNESSY, City Engineer, San Francisco

I HAVE inspected the Sheffield Dam of the Mission Ridge Reservoir in the City of Santa Barbara, which is 30 feet in height, with a 20 foot crest; upstream slope 2½:1, and downstream slope 2½:1, paved with concrete slabs 4 inches to 6 inches in thickness with a separate steel gate tower 15 feet upstream from a toe wall which connects with 200 feet of 24 inch diameter service line placed in a trench in puddled clay through the center of the highest portion of the fill. The concrete facing is built in 20x20 foot articulated blocks with a tapered ½ inch to ¼ inch joint resting on the slots, filled with asphalt and oakum.

The quake came at 6:42 A. M. on Monday, June 29. There is a fault line half mile south of the dam, and undoubtedly the vibration from the fault line must have opened the joints, as wooden houses in the vicinity moved as much as four inches on their concrete foundations. The dam must previously have been partially saturated from leakage, as it only had a depth of about 20 feet of water the morning of the quake, and a great mass of the center, about 300 feet in length, slid downstream perhaps 100 feet, and much of the material was washed by the current from the 35 million gallons water contents into the ocean. If the downstream half of this dam had been drained and proper wells made for catching any moisture, and if concrete supports, 24 inches wide by 8 inches deep, had been placed under the concrete slab joints, there would have been no doubt as to the stability of this structure. The construction of the outlet pipe in cut or tunnel in either side of the dam would also have been helpful.

A saturated condition of any dam near the downstream footing is fatal, and is a certain promoter of failure. The installation of drains to relieve this condition is therefore a wise preventative against disaster. A toe of coarse gravel or rock in this location serves a similar purpose, and is quite as beneficial as drains; and in all the earth fill dams I have made I have endeavored to have such a rock toe for drainage purposes on the downstream portion of the dam.

* * * *

With reference to the recent failure of a buttressed arch concrete dam at Gem Lake, Sierra Nevada Mountains, Mr. O'Shaughnessy writes to the Editor of Engineering News Record as follows:

"In your issue of July 2nd, you have an article which states that frost destroys a buttressed arch concrete dam, namely, the Gem Lake Dam, in the Sierra Nevada Mountains. I do not believe this statement is a correct interpretation of the causes of failure. I have built a similar dam at Lake Eleanor, 4660 feet above the sea, with 40 foot span arches and buttresses, using a proper grade of concrete materials, sand, gravel, and rock, and there are no indications of wear and tear on this concrete structure; and the location is subject to severe frosts without any noticeable depreciation whatever in the concrete. I believe the failure of the Gem Lake Dam is due, not to design of structure, but to defective granite dust and materials being incorporated in the sloppy over watered concrete during construction. The excessive mica of some decomposed granites is a fatal defect in either sand or gravel and should not be used."

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Vol. 82 JULY, 1925 No. 1

DREAMERS are not always doers, but doers are generally dreamers.

EDUCATE THE PUBLIC

Elsewhere in this issue is published a splendid article prepared jointly by Professor Frederic J. Armstrong, lecturer in business English in the University of Southern California, and Mr. Robert E. Wise, of Cramer & Wise, architect and engineer, Los Angeles, on the momentuous subject of the value of architectural advice. Members of the profession are just awakening to the fact that too many buildings are being put up without the services of an architect. Owners who would save an architect's commission by accepting inferior plans and incompetent supervision need to be educated into a better understanding of the architect's value. And it is up to the architect to do this educating. The paper by Messrs. Armstrong and Wise clearly defines the duties of an architect and tells the client what he may expect to receive if he employs competent architectural advice.

Arrangements have been made by the publishers to print this paper in pamphlet form and copies will be sold in lots of 100 at a nominal cost. If one out of every ten architects on the Pacific Coast mailed out 100 of these pamphlets to prospective clients it would be a fine start in a campaign of education that is right now sorely needed.

TABOOES "FIREPROOF" CONSTRUCTION

It has been contended for years by qualified engineers that there is no such thing in common residential building practice as "fireproof" construction. No doubt many thousands of American families are today living in so-called "fire-proof" homes under the delusion that they are immune to the hazards of fire. Such stress has been laid upon the "fire - proof" quality of certain building materials, that the Committee on Building Construction Specifications for Private Residences of the National Fire Protection Association, has made the following notation in its recent report:

> The use of the term "Fire-proof" is recommended to be discontinued. This general term has been erroneously applied to buildings and materials of a more or less fire-resistive or incombustible nature. Its indiscriminate use has produced much misunderstanding and has often engendered a feeling of security entirely unwarranted.

The term "fire-resistive" may be applied to any standard building material when correctly used. The fact that the material itself is incombustible does not mean necessarily that a structure of which it is the major part is fire-proof or fire - safe. The arrangement and protective features of construction are of paramount importance. Any

construction which will pass a fire test made in accordance with the tentative specifications of the American Engineering Standards Committee for Fire Tests of Materials and Construction is "fire-resistive," whether of stone, steel, concrete, lumber or brick.

STEAMING SNOW FROM ROOFS

A novel method of snow removal from roofs of commercial buildings has been developed in Boston, where the experiment has eliminated the danger to pedestrians in the street below from falling clods of ice and snow.

It is, in reality, a preventative method, in that steam is turned into properly installed and drilled pipes as soon as snow starts to fall. As a result the snow is melted as fast as it strikes the roof and runs off as water. — Heating and Ventilating Magazine.

There is nothing particularly new or novel about this. Even in San Francisco, where snow and ice are as rare as peaches in Alaska, the roof of a certain office building, designed by an Eastern architect, is equipped with steam pipes intended to melt ice and snow on the cornice. And this building has been standing nearly 20 years.

ONE of the most comfortable places to live is just inside your income.—San Francisco Chronicle.

GARDEN DINING NOOKS & ATELIERS

The garden is now conceived to be in its best sense a spacious open-air living room surrounding the home, for such it should surely be and attractively furnished if the owners are to reap the fullest enjoyment from their sanctuary of trees, shrubs and flowers. There one breathes deeply of fragrance and enjoys in a spirit of abandon the rich warmth of the sun, cool shadows, quiet pools, running water and the song of birds. In such a loved spot one can work devotedly, play with enthusiasm or rest in contemplation.

How few persons realize that some of the most delightful phases of living are rarely enacted in gardens only because such enjoyments are not planned and their significance is not grasped by the home lovers. Picture the dining nook which may be so arranged that it will prove suitable for breakfasts, teas and dinners. It should be secluded, quiet, screened by a hedge or vined pergola from the curious passerby and yet so conveniently related to the kitchen that dishes may be served hot. An electric switch in a sheltering tree or arbor post would make easy the employment of the electric toaster or other cooking device and also provide light on warm evenings. A barbecue grill can also be installed for family picnics as a revival of the old Indian or western spirit. The thought of the delicious and savory steaks which might be broiled upon it kindles the imagination and arouses anticipation. The area used for open-air feasting may be floored with wood or cement and covered with rugs. Even more inviting are patterns in brick, tile or stone or perhaps a protected lawn space. If such a retreat is well planned, more joy and satisfaction may result from its practical use than we can possibly estimate.

Many of us seem to believe this to be an idle or impossible dream in Central California, yet many favorable and climatic conditions and situations prove that we exaggerate in our attitude. Anyone seeking refreshment in the Japanese Tea Garden in Golden Gate Park may have tea served at any hour in any month, yet no shelter is offered there in the form of windbreaks of glass which might wisely be employed in partially exposed and windy situations. There are many potential retreats on the eastern slopes of San Francisco's hills and in hill towns of the Bay region and the Peninsula where meals may be comfortably enjoyed in the open. We may take pleasure in gardens as do residents of Southern California if due care is exercised in planning the garden

to provide wind breaks and screen plantings to facilitate dining under the sky or in the arbor.

The voices of children echoing in the garden and the gay humors of older members of a friendly group are rendered far more attractive because of an atmosphere of colorful, pungent plant life with bee and bird accompaniment. The moods of each hour, especially the charms of morning, afternoon, dusk and night all leave their distinct impress and we find ourselves growing steadily more attached to nature when we spend moments of prolonged beauty at the close of a repast in the garden. Associations formed here when time seems to pause will cling to the memory of the place long years afterward.

* * * *

Poets, dramatists and composers of music prefer quiet such as a garden study den could offer if conveniently furnished with writing equipment, broadarmed chairs, garden tables and benches. Those who must prepare for a lecture or other public address may prefer a far nook where they can read aloud or declaim without disturbance to others. Drawing, painting, etching and wood engraving may also be happily indulged in the garden. The den, study or atelier should be quietly situated, preferably on a raised terrace if in a garden composed on level ground or on a high knoll commanding a noble prospect, if on hillside property. The joy of entering upon any problem will be enhanced by pure air, sunshine and a delicious sense of freedom in so cherished a spot.

Very few owners have the vision, energy and ability to create such garden features and pictures single handed. The problems are far beyond the scope of the gardener who excels in the propagation of plants and in maintenance. It is to be hoped that the owner will see the wisdom of consulting a professional landscape architect who is trained along both practical and aesthetic lines to cope with and solve such problems for the highest welfare of the garden and the lasting happiness of the owner. By first frankly explaining to the landscape artist what he hopes to achieve for comfort, convenience and pleasure in the garden and then reposing confidence in him, the owner will be gratified in the end at the careful translation and expression of his feelings because of masterful conception and professional guidance in such vital work.

EMERSON KNIGHT,
Landscape Architect

THE SANTA BARBARA EARTHQUAKE

The Santa Barbara earthquake is sure to result in more or less criticism of building designs but the main point now is not so much what should have been done as what methods shall be followed to avoid a repetition of the damage in the future. Architects and engineers unquestionably need to give more attention to design that will reduce the earthquake hazard. Walls must be properly tied and braced and building codes of our cities should make such precautions mandatory. The structural features of all buildings should be given more attention, special care being taken to provide against severe earth stresses. It is gratifying to note the fine spirit Santa Barbarans are displaying and like San Francisco, the city is going to rebuild on lines bigger and better than before.

Granted Certificates to Practice

Architects' certificates were granted to the following at a meeting of the State Board of Architecture, Southern Division, June 30: R. F. Rabold, 2819 Elm street; Sidney W. Orme, 603 Wright-Callender building, and Russell E. Collins, 1123 Stock Exchange building, all of Los Angeles; William L. Stoddart, 50 E. 41st street, New York City; Walter C. Folland, 608 E. Colorado street, and Trent Thomas, 2415 Mar Vista avenue, Pasadena.

UNPROFESSIONAL CONDUCT

The Board of Directors of the American Institute of Architects have ruled that it is unethical and unprofessional for an architect to attempt to practice his profession without complying with the legal requirements of the State regarding the practice of architecture.

This subject was brought to the attention of the Board of Directors of the Institute by the committee on registration laws, who had received numerous complaints that many members of the Institute were in the habit of attempting to practice architecture in states where the practice of the profession is regulated by law without first complying with the requirements of such laws.

A reading of the Board's report to the Fifty-eighth Convention held recently in New York, seems to clearly indicate that it will be the duty of the Committee on Practice to handle all complaints of this kind that may in the future be brought to its attention.

Shall We Build for Safety?

Mr. D. Knickerbacker Boyd, architect of Philadelphia, says:

The recent earthquakes felt throughout the northeastern part of the United States, also in California, were not surprising. Scientists had predicted the possibility and warned against a recurrence. Shall we ignore this warning or build in such a way that we will be safe from destruction? Experience has taught that sound fireproof construction will withstand even the severest earthquakes. Let us then insist on safety and eliminate the unsafe forms of construction.

Illinois has just been swept by a tornado. Where will the next disaster occur and what will be the consequences?

No one can tell when, how or where nature will strike; but sound construction will minimize destruction from storms and quakes, and brick and other fireproof material will reduce the ever attendant fire hazard and the subsequent horrors.

As if the Illinois disaster were not enough for one day the same paper carries another warning "$5,000,000 Toll Taken by Flames at Palm Beach." Large wooden hotels were destroyed by fire and the whole town threatened. This could not have occurred had the buildings been fire-safe.

Fire is an ever-present menace and the loss in the United States per capita exceeds by many times the loss in any other country. We lose property valued at hundreds of millions yearly from fire, not to mention the loss of life. We spend millions to put these fires out and much of this could be saved if we used only fireproof materials.

San Francisco was destroyed by earthquake and fire; Berkeley by fire alone; Illinois devastated by tornado and fire. Whether it be city, suburb or country there is always danger of destruction. The warning has been given. Past experience shows how to provide safety and security in building construction.

COMMUNICATIONS

The Small Town Architect

2023 Parker street
Berkeley, California
July 3, 1925

Editor, The Architect and Engineer
Sir:

Kindly change my address on your books from Box 185, Concord, California, to above address. I am returning to Berkeley where I formerly lived for seven years, after an absence of nearly fourteen years.

Sometime in the interests of community betterment, it might be well to write up what little I have been able to do for the Town of Concord in spite of moss backs and untoward circumstances. Going there for health of children, I made up my mind to see what a resident architect could do in a little country village with adobe streets and shabby buildings, and few sidewalks. I have designed nearly seventy buildings there and, such as they are, their promotion and that of public improvements has demanded much perserverance and tact and labor. Much had to be done gratuitously people were of limited means; and there was always the cheap-john carpenter to contend with on smaller work and the outside architect to "horn in" on any work of importance. I am glad to say that comparatively few of the latter have been offenders. My professional brothers have been good to recognize my right to the work in one's home town and vicinity.

And why not? The doctor, lawyer, dentist, clergyman, locating anywhere in our smaller communities are assured of such business on professional call in their lines as may come up. But the architect has little opportunity and no such assurance. His professional standing is damaged by his residence in such a community.

Therefore, instead of our architects being distributed over the State using their skill in building up the smaller towns and being leaders in improvements and good taste, they congregate in the larger cities and make forays on these towns and villages to get the larger work that may come up, leaving the rest to the local carpenter.

The great H. H. Richardson lived in Brookline and had his studio in his home. It would be better for California communities if our architects could do the same. But present conditions would seem to make an office in San Francisco an essential to work and reputation.

I have enjoyed reading your publication.

Yours turly,
FRANCIS W. REID.

Back Number Wanted

Editor, The Architect and Engineer,
San Francisco

Sir—We will be very glad to pay one dollar for a copy of the August, 1922, Architect and Engineer.

Community Arts Association
33 East Canon Perdido St.
Santa Barbara.

Personal

Mr. Peter Ficker has moved from Los Angeles to 756 Hawthorne Place, Pomona.

Mr. Watson Vernon, architect of Los Angeles, has moved his offices to 515 Indian avenue, South Pasadena.

Mr. Percy Parke Lewis, architect of Los Angeles, has moved to 1037 Tremaine avenue, Los Angeles.

Mr. Robert Finklehor, architect, has moved to 647 South Gramcery street, West, Los Angeles.

With the Architects

Building Reports and Personal Mention

Escapes Earthquake Damage

Among the structures that received little or no damage in the recent Santa Barbara earthquake was the new Santa Barbara High School situated near the Riviera and designed by Architect William H. Weeks of San Francisco.

During the first days of the disaster lists of buildings damaged and destroyed by the force of the quake were made public, in some of which the name of the Santa Barbara High School appeared. Later reports stated that there was no damage and certainly no structural damage to this building. The following letter was received by Mr. Weeks from Mr. B. T. Owsley of Cobby & Owsley, contractors of San Francisco:

Dear Sir:

I was in Santa Barbara during the earthquake and made it a point to look over the new High school building the day after the quake. The only damage I could see was a small ornament thrown off the front gable. I could not see a crack in any part of the building. I was amazed, after seeing the destruction on State street. The building shows no signs of the earthquake whatsoever, and is a wonderful example of good construction.

Very truly yours,
(Signed) B. T. OWSLEY.

July 1st, 1925.

Noted Architect Dead

Mr. Donn Barber, architect of many of the monumental buildings in New York City, died on May 29th. Noted for his work in many lines, recognized for his genius and loved for humane qualities, the passing of Donn Barber requires no eulogy, for his monuments stand as memorials. He practiced in many fields, ecclesiastical, domestic, commercial and civic, giving to each his best. It was a mere coincidence that the design for the proposed Broadway Temple, which will rank as a great achievement for an architect, should have been his final work.

San Jose Bank Building

Extensive alterations and additions are to be made to the building at First and San Fernando streets, San Jose, which has recently been purchased by the Security State Bank. Architects Binder & Curtis, of San Jose, are preparing the plans for the bank's new quarters which will cost $50,000. The same firm is completing drawings for a four-story reinforced concrete addition to the San Jose Y. W. C. A. building.

Oakland School

Architect Washington J. Miller has completed plans for the new Fruitvalle High School building in Oakland, estimated to cost $160,000

Granted Certificates to Practice

Architects' certificates have recently been granted to the following by the State Board of Architecture, Southern California Division: Harry Sims Bent, 2410 W. Seventh street; Herbert E. Mackie, 1312 Washington building; Ralph C. Flewelling, 1218 Taft building; William E. Mayer, 2233 Beachwood drive; Charles R. Spencer, 1107 Hibernian building, and W. Eugene Saxton, 1140 N. Benton Way, all of Los Angeles, and Vance W. Travis, 14101 Second street, Lawndale.

San Francisco Hotel

A six-story Class C reinforced concrete hotel having 60 rooms will be erected on the west side of Jones street, north of Eddy, San Francisco, by Mr. Harry Warwick from plans by Architect S. Heiman. The cost is estimated at $100,000. Mr. Heiman has also prepared plans for alterations and additions to the building at Fillmore and Eddy streets, San Francisco, which will involve an outlay of $100,000 or more.

$2,000,000 Oakland Hotel

Announcement is made by the United Income Properties Company of San Francisco of the proposed construction of a fourteen-story hotel on San Pablo avenue, Market and twenty - eighth streets, Oakland. Over $2,000,000 will be expended on the hotel, which will contain 450 rooms. Mr. Joseph L. Stewart, San Francisco architect, is drawing the plans.

New Mexican Border City

To build on the Mexican border one of the largest resorts in the world is the plan of a company of promoters incorporated under the name of the Aztec City Co., and headed by Jerome A. Bassity. Messrs. M. J. Lyon and Matthew O'Brien, San Francisco architects, are at work on the plans.

Contract for Women's Club

R. McLeran & Company of San Francisco, has recently been awarded a contract for $1,250,000 to build a twelve-story Class A club building on the southwest corner of Sutter and Mason streets, San Francisco, for the Women's Club of San Francisco. Bliss & Faville are the architects.

Bakersfield Office Building

A five-story Class A physicians and dentists office building will be erected at Bakersfield, from plans being prepared by Architect Chas. H. Biggar, Bank of Italy building, Bakersfield.

Personal

Architects W. M. Somervell and J. L. Putnam announce the removal of their offices from the Hibernian building to 904-5 Commercial Exchange building, 8th and Olive streets, Los Angeles.

Mr. C. W. Koiner, city manager of Pasadena for the last five years, has resigned. His successor has not been chosen.

Architects Hudson & Munsell have moved their offices from the Douglas building to 631 Petroleum Security building, Tenth and Flower streets, Los Angeles.

Architect A. L. Acker has moved his office from the Douglas building to room 692, Petroleum Security building, Tenth and Flower streets, Los Angeles.

Cramer & Wise, architect and engineer, succeed to the firm of Cramer, Bartlett & Wise, 124 West Fourth street, Los Angeles.

Mr. Ralph D. Wichman, electrical and civil engineer with the Pacific Gas and Electric Co., San Francisco, for the past three and one-half years in charge of design of transmission sub stations, distribution sub stations, steam generating stations and steam heating plants, is now associated with Messrs. Wichman & Albers, engineers service bureau, 525 Market street, San Francisco.

Messrs. J. D. Galloway of San Francisco and H. C. Henny of Portland have been retained by the Los Angeles county supervisors as consulting engineers for Los Angeles county flood control district. Their particular duties will be to advise regarding the location of the proposed $25,000,000 dam in San Gabriel canyon.

Architect Frederick J. Soper has moved his office from Central building to suite 1103 Kerckhoff building, Los Angeles.

Architect William Skidmore has moved his office from 519 Lissner building to suite 420 in the same building, Los Angeles.

Messrs. G. A. Hanssen of San Diego and Ralph Swearingen of Calexico have formed a partnership with offices in the Spreckels building, San Diego, and 212 Dool building, Calexico. Manufacturers' catalogues and trade literature are desired for the San Diego office.

Architect Geo. W. Kelham of San Francisco, has been appointed University Architect by the Regents of the University of California, Berkeley. Mr. Kelham's appointment in no way conflicts with the work of Mr. John Galen Howard as head of the College of Architecture.

Mr. F. W. Stevenson, architect, formerly with the firm of Rogers & Stevenson, architects, has severed his relations with that company and established an office at 355 Spreckels building, San Diego, California.

Class A Apartment House

Architect C. A. Meussdorffer is preparing working drawings for a ten-story ten-apartment house for Dr. C. R. Bricca to be built on Green street, near Jones, San Francisco. The contract for the structural steel has been let to the Central Iron Works.

Crocker National Bank Building

Architect Lewis P. Hobart is completing plans for additions to the Crocker National Bank building at Market and Post streets, San Francisco. The construction work will be in charge of the Dinwiddie Construction Company.

Apartment House

Architects Fabre & Hildebrand, 110 Sutter street, San Francisco, have completed plans for a $16,000 apartment house for Mrs. E. Wallace at 27th avenue and Balboa street, San Francisco; also a large two-story frame and stucco residence at 14th avenue and Ulloa street, San Francisco.

Dormitory Building

A second unit to the Pacific School of Religion, Berkeley, will be erected at once from plans by Architect W. H. Ratcliff, Jr. The new structure will be a dormitory and will cost $50,000. Mr. Ratcliff has also made plans for ornamental entrance gates and posts at Mills College, estimated to cost $15,000.

Old Ladies' Home

The Episcopal Old Ladies' Home of San Francisco will build a three-story Class B reinforced concrete building on the northeast corner of Lombard and Lyon streets, San Francisco, at a cost of $200,000. The designers and managers of construction are Williams & Wood, 405 Mills building, San Francisco.

Los Angeles Hotel

Architect Lester H. Hibbard, Metropolitan building, Los Angeles, has completed plans for a twelve-story Class A hotel for the Young Women's Christian Association at Los Angeles. The building will be erected at 941 South Figueroa street and will cost $900,000.

Country House

Architects Willis Polk & Company, 277 Pine street, San Francisco, have completed plans for a country house of the Spanish type to be built at Hillsborough, San Mateo county, for Mr. Garfield Merner. The estimated cost is $50,000.

Insurance Company to Build

The Hartford Fire Insurance Company will erect a home of its own on the north side of California street between Stockton street and Grant avenue, San Francisco. The plans are being drawn by Architects Bakewell & Brown.

This Happened in a Los Angeles Architect's Office

By HAROLD O. SEXSMITH, in California Southland

MRS. H. (The Client): Why is it that you charge so much for the design and supervision of my house? Your fee seems quite out of proportion to the service you are to render. It was only yesterday that a contractor offered to furnish the plans for my house for three per cent of the cost. Another has offered to furnish them free of charge if I would allow him to build for me. I realize that I can't get something for nothing but three per cent seems quite enough.

The Architect: It is true that there are men who will agree to do this work for you at the price you have mentioned. It would be a long tedious story for me to tell you why I think it would be unwise for you to have your work done by one of them. Here is a letter from a friend of mine who is now having a house built by a three percenter. He too failed to see how an architect could earn his fee. But let me read what he says. "The contract was let for twenty-two thousand and seven hundred dollars. I was elated because it was a figure below what I had expected I would have to pay. I soon found out however, that the plans were woefully incomplete. There were endless arguments as to the interpretation of the drawings and specifications and continual claims for extras from the various sub-contractors. To date I have paid out in extras which should have been included in the original design, practically $8,000. Old man, I am through with cut-rate architects. I could have paid you the ten per cent fee you asked and still be about several thousand dollars ahead. I am beginning to realize, too, that the house I am getting is not as well designed or as well built as it should be." Well, there is more of it there in the letter, Mrs. H., if you would like to hear it but I won't bore you with it. I have a dozen letters similar to that in my file.

* * *

The Client: You have convinced me. At any rate I will talk the matter over at home this evening and we will come to an early decision as to what is to be done. Good day, and thank you for your advice and help.

* * * *

Fifteen minutes later the architect is called into the contractor's room to see a new hardware specialty. The salesman explains its merits and the architect is interested. The article seems efficient and lower in cost than similar equipment that has been specified. The following dialogue ensues:

The Architect: "What was that you said about a bonus?"

Salesman: "We are offering a bonus of fifteen per cent to the architect or contractor who will specify or use this equipment on his work."

The Architect: "Do you mean that if I specify a hundred dollars worth of this article in my next job you will send me a check for fifteen dollars?"

The Salesman: "Exactly it sir. There are dozens of architects who have accepted this bo——."

The Architect: "Stop! Don't call it a bonus, call it a bribe. Such a proposition is just plain crooked. Such offers as this one you are making have made it possible for crooks in my profession to offer their services to a client for two or three per cent when in reality they were receiving ten or twenty per cent for a service which any architect of ability and integrity would be ashamed to offer." The architect looked up at the office clock. Its hands were both up. The salesman stammered something and wilted.

The archit;ect glanced again at the clock. He shook his head as he moved to the door soliloquizing as he went. "Well, old timer, I'd put up my hands too, to hide my face but I'm afraid one of those birds would slip in and pick my pocket. Why can't I have all my clients here to listen in when such things happen?"

Editor's note: The above incidents actually happened in a Los Angeles architect's office on the morning of May 15th.

Crockett—the City Beautiful

Within three years hillsides of this famous sugar city will be covered with sequoia gigantea, if the plans of Mr. George M. Rolph, general manager of the California and Hawaiian Sugar Refining Corporation, materialize. For Rolph has launched the greatest "city beautiful" campaign in the history of Western cities, and that his dream will materialize is assured by the fact that the program has been placed in direct charge of the company's chief gardener, L. G. Macchi. The latter, regarded by Luther Burbank and others, as being a horticultural wizard, is preparing to plant several hundred young sequoia giganteas in a plot of ground owned by the sugar refinery. A corps of gardeners, under Macchi's direction, are now busy preparing the soil.

"In ten years," said Macchi, "I expect the trees to be six feet in height. I am conservative in that prediction, however, because eight years ago I planted a sequoia gigantea and today it has reached eight and a half feet. In order to find the proper space for the trees to flourish, I am adding a half-acre to the

C. and H. nursery.

Tree lovers are watching the Crockett program with interest, for when the redwoods are once planted the city can boast that it is the only community in the world that has the redwood growing on its hills. The tree grows naturally only in a narrow strip of Humboldt County, California.

Better Plastering Literature

"The A-B-C of Metal Lath Erection," a folder issued by the Associated Metal Lath Manufacturers, Inc., 123 West Madison street, Chicago, is filled with practical information for those who wish to familiarize themselves with the proper erection of metal lath as a plaster base.

"The Art of Better Plastering" is a booklet which emphasizes the necessity for Better Plastering as urged by the National Council for Better Plastering, 819 Madison Square building, Chicago, Ill. Attractively illustrated, it tells of the importance of the plastering since it represents 80 per cent of the interior of the home, and shows the necessity of a reinforced base for the plaster.

"Better Plastering for Your Home" is an interesting illustrated pamphlet, printed in two colors, describing the advantages and safety of proper plastering in home construction. Points to watch to insure a "Better Plastering" job as advocated in the National Campaign for Better Plastering also are outlined. Copies of any or all of the above pamphlets may be had without charge by writing to the National Council for Better Plastering, 819 Madison Square building, Chicago, Illinois.

Stronger Walls at Lower Cost

Considerable impetus will be given to building in San Francisco by an amendment to the building code which was approved last month by the San Francisco Board of Supervisors.

This is the first amendment to the building ordinances since 1906 which permits the use of a less expensive material. Now it is estimated that wall construction in San Francisco will cost 25% less than before.

Heretofore all walls have had a backing of one-inch lumber sheathing over the studding. While this assures sturdy walls, it has been a more expensive form of construction than is used in other parts of the state. With the new amendment a patented backing for stucco or plaster walls, known as Bishopric Base, is endorsed for use instead of the sheathing.

It was only after convincing proof and tests had been placed before the Board of Supervisors that this amendment was authorized, according to Mr. Leo Meyer, of Meyer Muzzall Co., San Francisco distributors for Bishopric Base.

The Term "Responsible Contractor" Defined

REALIZING the importance of placing a definite concept upon the phrase "responsible contractor," the Associated General Contractors of America recently appointed a committee to develop a distinct expression of the meaning of the term.

This committee, with Mr. J. H. Ellison, of Minneapolis, as its Chairman, presented its report at the recent meeting of administrative bodies of the Association held at Washington.

The text of the report—presenting a sturdy pioneer effort at definition that will be welcomely received in many quarters—is as follows:

THE RESPONSIBLE CONTRATOR—Whether an individual, firm or corporation, must possess, as a minimum of requirement, three essential qualifications, as follows:—

INTEGRITY—He must consistently and persistently comply with the spirit as well as the letter of his contracts and must handle every transaction with fairness and honor.

SKILL—He must possess the necessary technical knowledge and practical business experience, as applied to his particular form or group of undertakings, to enable him to carry them to completion in a workmanlike and economical manner.

RESPONSIBILITY—He must possess cash or credit to meet all his commitments, also the equipment and organization for the satisfactory performance and completion of his undertakings.

In special cases, problems may appear which will demand that consideration be given to other qualifications, but in general the above three requirements apply to all construction contracts, and without them no contractor can properly be regarded as wholly satisfactory.

Competition

The American Radiator Company invites architects and draftsmen to participate in a competition for a plan of an ideal cellar and offers prizes for best designs as follows: first, Class A, $500; second, $300; ten mentions, $50 each; Class B, first, $500; second, $300; ten mentions, $50 each; third, Class A, $200; fourth $100 and the same amounts for third and fourth prizes Class B. The competition closes August 25. The program may be obtained from the American Radiator Company or The Architectural Forum, 383 Madison avenue, New York City.

Trade Catalogs

David Lupton's Sons Co., Philadelphia. Lupton Casements of copper-steel, designed to meet every requirement. Pamphlet contains good illustrations of various window casements manufactured by this firm, together with valuable descriptive matter and specifications.

Pelton Type FD Pump—Bulletin No. 21 issued by the Pelton Water Wheel Company, 19th and Alabama streets, San Francisco, describes Pelton Type FD two and four stage, high head, small capacity pump. It has been especially prepared for the convenience of architects, engineers and contractors, and contains dimensional drawings, ratings, typical applications and other useful data.

Berkeley Apartments

Architects Reed & Corlett of Oakland have completed plans for a $60,000 residence apartment house for Mr. Weiss et al on College avenue, near Durant street, Berkeley.

With the Engineers

Professional Conduct of the Engineer Towards His Client*

By E. E. CARPENTER, C. E.

1. The engineer should pursue his professional work in a spirit of strict fidelity and full loyalty to his clients and employers.

2. He should inform a client or employer of any business connections, interests or affiliations which might tend to influence his judgment or impair the disinterested quality of his services.

3. He should accept compensation for his services in connection with any work from one source only, except with the full knowledge and consent of all the interested parties.

4. He should regard and maintain as confidential any information obtained by him relating to the business affairs and technical methods or processes of a client or employer.

5. He should not engage in any outside work without the full knowledge and consent of his employer.

6. When connected with any work he should not accept commissions, outside employment, promise of employment or any other consideration from a contractor engaged upon that work.

7. He should have no business dealings or connections with any client of his employer without the full knowledge and approval of his employer.

8. He should entertain no offers of employment or other considerations from a third party when such may in any way influence his actions or decisions with respect to the relations which may exist between such third party and the engineer's employer or client.

9. He should not accept commissions or other considerations for specifying or recommending supplies, equipment or service.

10. He should not split fees as commissions for securing work, nor work with other engineers on a split-fee basis unless assured that his client is not deceived thereby.

11. He should have no interest, direct or indirect, in any materials, supplies or equipment used in the construction work of his client or in any firms receiving contracts for his client's work without informing his client in advance of the nature of such interest and obtaining his sanction.

12. He should not engage in the independent practice of engineering without the knowledge and sanction of his employer, and under no circumstances should he compete with his employer on the basis of lower fees.

*Adopted as part of "Rules of Good Faith for Engineers," by the American Association of Engineers.

Apartment Building in Miniature

In connection with the first Architectural and Allied Arts Exposition the Westinghouse Electric and Manufacturing Company placed on exhibit a real apartment building in miniature, completely supplied with exact scale models of equipment manufactured by that company, showing this equipment in actual operation; driving pumps, lighting rooms, operating elevators, exhausting air, providing refrigeration and producing heat for warmth, as well as for cooking and ironing.

The model, built on the scale of one inch to the foot, represented a modern six-story apartment building in which large and small apartments were provided with all the comforts and conveniences of electricity. The drawings and plans were made by a New York architect.

Mechanical Bricklayer Invented

Bricklaying, an art which has heretofore successfully resisted the onslaughts of machine methods and has maintained its integrity as a hand process, is, according to recent reports, soon to be roped into the arena of mechanically worked activities. For an electric bricklaying machine which, it is claimed, lays 1,200 bricks an hour, is said to be the latest application of electric energy to industry. Upon rails placed around the outside walls of a building, a traveling boom is set, and upon this are the mortar tank and laying mechanism, driven by a three-horsepower motor. At the end of the wall the machine changes direction and proceeds as before until it has laid one row of bricks entirely around the building. The boom is then raised the thickness of one row of mortar and bricks, and another trip is begun.

Painting Contract

A. Quandt & Sons have been awarded a contract by Lindgren & Swinerton, Inc., to complete all the painting and decorating work in connection with eight new cottages being erected for the Del Monte Properties Company at Del Monte, California. Lewis P. Hobart and Clarence A. Tantau are the architects.

What Is the Matter With Plastic Flashings?

By J. I. HOLDER, Director of Engineering Department
of The Paraffine Companies, Inc.

Why do so many architects and engineers have such little faith in plastic flashings?

Why do roofing contractors avoid them and advise the use of metal flashings?

The answers to these questions and the reasons why plastic flashings have failed to build up good will and confidence towards this particular method of flashing construction is herein set forth. It is a subject overwhelmingly negative after the vote has been cast and the returns checked.

SOME forty years ago the idea of plastic flashings was originated and developed. Experiments may have been made prior to that time, but certainly many experiments have been made since. Apparently it is still in its experimental stage if the results obtained are a safe guide for decision, particularly when compared with the old-fashioned method of flashing with metal.

As near as it can be determined the idea of plastic flashing came with the advent of what is known as plastic slate roofs. These roofs and flashings were built of successive or alternate layers of tar saturated felt and courses or layers of plastic slate compound troweled between the felt.

Plastic slate is a mixture of slate dust (slate ground very fine) and refined coal tar. In some cases the slate dust contains a certain proportion of ground mica or similar inert material. The proportion of ground slate is about 50 per cent, and that of the coal tar 50 per cent. The slate dust is dumped into a mixing box about the size and shape of that used for mixing plaster. The hot tar is then gradually introduced and thoroughly worked into the slate dust until it produces a plastic mixture. When cold it "sets" and forms a very tight bond to wall surfaces, as well as to the tarred felt for an uncertain period of time.

From this idea there have been developed hundreds of plastic compounds, many of them with considerable virtue, and which are successfully utilized to meet a variety of conditions and problems. None of these compounds, however, give their greatest service and value when used in the construction of plastic flashing work. Why?

A concrete, brick, or tile wall is more or less porous. At least there is sufficient porosity to draw into the wall a certain amount of life giving oils from the compound. The "heart's blood" of the compound is literally "sucked" out. The toll that is taken depends on the porosity of the wall and how well it has been primed and with what it has been primed, if indeed the wall was primed at all.

But that is one side of the attack made on the compound. Nature makes a far more determined and ruthless attack. The sun's rays, light, or rather the short wave length radiant energy—generally spoken of as "the ultra violet rays" attack the oils in the plastic flashing from the other side—the exposed side. All bitumens and bituminous compounds suffer most and deteriorate far more rapidly where exposed to sunlight than those in shaded or dark places. This is evidenced by the excellent results obtained in waterproofing (50 and 60 years service without any deterioration whatsoever) where no light can penetrate to the bitumen.

Now a plastic compound in order to function properly as a plastic flashing material must be made to a consistency that will be sufficiently "heavy" through the introduction of inert materials, such as asbestos fibre. Naturally the more inert materials that are introduced the less waterproofing value there is in the aggregate—in other words the less the amount of waterproofing oils. And if the compound is made too "light" with more of the waterproofing oils and less of the inert materials it does not have sufficient stability to hold in place the "felt" materials used as a binder or conveyor in the construction of these flashings. Therefore, the life and durability of the compound must be sacrificed to meet the problem of being sure that the finished flashing will stay in place after it is applied.

It might be claimed that all this is theory; but there is now enough definite evidence to dispel all doubts. The architects and engineers who have had experience and practically all of the roofing contractors and roofing workmen are almost unanimous in their pronouncement that plastic flashings, irrespective of whose materials are used or how they are constructed, are uncertain as to results and do not have the record of good service and durability behind them as flashings properly constructed of metal. Perhaps the most unbiased authority is the United Roofing Contractors of America who as a whole recommend the old-fashioned true and tried method of metal counter and base flashings, and who rarely depart from the use of them, unless required to do so, either by specifications or because a flashing groove cannot be used.

Upon checking up with nearly all of the leading roofing contractors on the Pacific Coast it has been found that plastic flashings are serviceable without repairs for only a limited period of time,

(Concluded on page 123)

Trade Notes

Heating System for Costly Home

"One of the most palatial and elaborate residences in Southern California is being erected by Mr. R. Clifford Durant, millionaire motor manufacturer and sportsman," says Mr. A. J. Hartfield, president of the Pacific Gas Radiator Company.

"Mr. Durant is building this home for his mother and has chosen a site at the junction of Mountain View and Shuyler Roads in Beverly Hills, opposite the Doheny estate.

"Every conceivable convenience is being installed, including swimming pool, bowling alley and large ball room. No expense is being spared to make the house the most beautiful of its kind.

"Ten Pacific unit furnaces will be installed in the basement, and operated from upstairs by an electric thermostat, controlled so that an even temperature will be maintained throughout the house at all times."

Mr. Durant's architects are Messrs. Koerner & Gage.

Oregon Uses California Brick

An unusual example of the quality of Los Angeles-made face brick is shown in the record shipment of 47,000 white enamel face brick from Pacific Clay Products to Portland, Oregon.

"The selection of Pacific white enamel brick was the result of a careful test made by the Portland architects," explained Mr. E. T. Wintersgill, sales manager of Pacific Clay Products. "In planning the Bedell building they determined upon an exterior of purest white. To keep this surface undimmed through the years they realized the necessity of getting a very fine quality of white porcelain enameled brick. All the leading brick manufacturers in the West were requested to send samples for testing and the result of the analysis was the selection of Pacific face brick."

Will Sell Wesix Heaters

Mr. W. D. Sandoval, formerly in charge of the electric heater sales department of the Pacific Gas & Electric Company, has organized the Sandoval Sales Company, with offices and salesroom at 115 Jessie street, and will have the exclusive sales distribution of the Wesix electric air and water heaters. These heaters have been installed in many buildings in the Bay District the past year or two and are reported to be giving excellent satisfaction.

A Drainless Refrigerator

There is something new in the line of refrigerators for apartment houses. The manufacturers say it saves the cost of plumbing and affords the tenant an economical cooling device. The water is retained in the refrigerator without the possibility of overflowing, to be drawn off at will by a small faucet in front and can be used for various purposes that require a soft water. The merits claimed for this innovation are:

1st. No drain to be installed.
2nd. Independence of placing refrigerator.
3rd. No cleaning of pipes, traps, etc.
4th. No leaking, overflowing or sweating
5th. A saving of at least 25 per cent of ice.
6th. An absolutely dry, ventilated food chamber.

These refrigerators are built in various sizes and a small kitchenette size which can be installed on drainboard of sink or under it. Mr. M. E. Hammond, 821 Market street, San Francisco, is the agent.

Large Installation of Rubber Tile

The United States Rubber Company has recently completed an installation of 45,000 square feet of U. S. tile flooring in the general offices of the National Geographic Society building, Washington, D. C.

This type of soft floor tile is rapidly coming into general use in office floors, and the National Geographic Society is reported to be delighted with this pleasing installation.

Several large Pacific Coast contracts of U. S. tile flooring are in course of installation, including the new Elks Temple at Sacramento, 6,000 square feet, Leonard Starks, architect; the Masonic Temple, Spokane, Washington, 7,500 square feet; the Elks building, Salem, Oregon, 10,000 square feet; and the Adam Grant building, San Francisco, 6,800 square feet.

New Panel Board Catalog

The Frank Adam Electric Company of St. Louis, Mo., announces for distribution to architects, engineers and contractors a new catalog No. 35, showing all of this company's line of safety type panel boards for two fuse and single fuse codes. Copies may be obtained from the Pacific Coast representatives, H. B. Squires Company, 583 Howard street, San Francisco and 249 Boyd street, Los Angeles.

New Bonded Floors Literature

The Bonded Floors Company, as a part of their service to architects, announces the following literature, available for the asking from any of the company's district offices:

The "Distinctive Floors" Series. Four pamphlets 7¾x10¾, illustrated in full color, each describing and picturing a resilient floor material as follows:

(1) Battleship Linoleum. Explains the advantages and proper use of this durable economical material.

(2) Treadlite Tile. Shows a variety of colors and patterns of this adaptable cork composition flooring.

(3) Rubber Tile. A description and color photographs of this luxurious floor of colorful, marble-like, resilient tile.

(4) Natural Cork Tile. Description and color plates of this super-quiet, resilient floor.

Linoleum Specification. Folder, 8¼x11, 8 pages. Standard specification for installation of battleship linoleum with detailed description and explanation. Also includes copy of Federal Government Specification No. 209.

Practical Working Specification—for installing battleship linoleum, treadlite tile, rubber tile and cork tile.

Olla Manufacture

An industry which began in the days of the Incas, a thousand years ago, now flourishes in Los Angeles alone, according to Mr. W. R. Fawcett, secretary of Pacific Clay Products.

"The clay olla is manufactured only in Southern California and Mexico so far as we can discover," says Mr. Fawcett. "Last year over 70,000 ollas were turned out from our plants, which makes Los Angeles the world's largest olla manufacturing center. This production is growing every year as the use of the olla spreads over a greater territory.

"The olla is a clay water cooler, originated by the Incas in Mexico to keep water cool despite torrid heat."

School Lighting

A booklet on School Lighting has recently been published by the Engineering Department of the National Lamp Works of Cleveland, Ohio. This booklet was prepared with a view of calling the attention of those concerned with and responsibility for the lighting of schools in every community to the importance of good lighting. The specifications are simple and definite, which allows anyone to make a comparison of existing or proposed lighting installations with standards which have been promulgated by the Illuminating Engineering Society and the American Institute of Architects. A copy of the book will be mailed free on request.

Hotel for Exeter

Architect William H. Weeks of San Francisco has been commissioned to prepare plans for a community hotel at Exeter, California. The estimated cost is $200,000.

Valuable Book on Terra Cotta

One of the most recent publications of the National Terra Cotta Society, 19 West 44th street, New York, is entitled, "Terra Cotta of the Italian Renaissance".

This work is issued at the nominal price of $3.00 per volume and will be sent by the National Terra Cotta Society on approval to architects and those identifying themselves as architectural draftsmen and students in architectural schools. The issue is 6,000 copies.

The contents are 200 full page plates with descriptive captions from photographs taken especially for the National Terra Cotta Society by Mr. Arthur Frederick Adams, A. I. A., in a trip through Italy during the summer of 1923. This is the first work which offers a comprehensive survey of the terra cotta architecture of early Italy and contains many views not heretofore published. The book should be in every architect's library and is a valuable contribution to architectural literature.

What Is the Matter With Plastic Flashings?

(Concluded from page 121)

six months to five years, the average being two to three years. Constant repairs and attention are necessary to keep them in good condition Due to the attack of the light rays of the sun on one side and the drawing or suction of the oils by the wall on the other side the flashing has great difficulty in holding a perfect bond with the wall—openings and cracking occurring at intervals along the upper edge of the flashing, permitting the inlet of water with consequent damage to the building or its contents or both.

On the other hand it is not difficult to obtain a good serviceable flashing at small expense with the use of metal, and where metal counter-flashings are used it should be seen to it that the flashings are well secured into the flashing groove, that good cement mortar is used for pointing (not plaster) and that after shrinkage of the cement mortar has taken place the flashing groove line be painted or plastered over with a plastic compound to fill up all hair cracks or small openings.

Let it be clearly understood that plastic compounds are invaluable and serve a most important field of special conditions and problems, but that they do not serve their best purpose nor use in combination with roofing materials which are to function as a flashing.

Corrosiron for the Builder

By H. M. HOWARD, Manager
Corrosiron and Monel Department, Pacific Foundry Company

CHEMICAL plants have for many years been subject to increasing demands for their products, and as methods and processes were improved to meet those demands, the need arose for materials which could be used on a large scale to withstand the attacks of acids and corrosive chemicals. One class of material which has been very successful in this exacting service is high silicon iron containing 13% to 14% silicon. Corrosiron, developed and made in San Francisco by the Pacific Foundry Company, is one of the two metals of this type made today in the United States.

Corrosiron was developed for service under the highly corrosive conditions of modern chemical industries, such as the refining of oil, and the manufacture of acids, explosives, and heavy chemicals. Plants of this nature have used Corrosiron for some years under most severe conditions. The concentration of sulphuric acid is carried on in pans of Corrosiron. The varying strengths of acids and the temperature of the operation make a severe test for any material.

Corrosiron is used also for the apparatus needed in the manufacture of nitric acid, which enters largely into the making of explosives. During the war large tonnages of this metal, in such forms as condensers, pumps, pipes, valves, and containers, were installed in the various explosive plants, including those of the U. S. Government in West Virginia, as well as locally. Shipments were also made to plants in British Columbia, both for the manufacture of high explosives and for the production and handling of nitric acid from the air.

Uniform success with the metal in places where corrosiron was exceedingly severe, led to its use for sanitary drain lines. Under the conditions existing in chemical laboratories, plating establishments and other places where small amounts of chemicals are handled, the ordinary cast iron drain pipe has rather short life, due to the corrosion set up by the acids in the waste which it carries. This condition entails considerable and frequent expense for replacement of the pipe, not to mention repair of damages caused by leakage.

Corrosiron provides a very satisfactory solution for this problem, since under these conditions the attack of corrosives is so slight as to be almost negligible. Hence, in recent years, the use of Corrosiron drain lines has become widespread, and it is being specified by architects more and more. The additional cost of such a drain line is but little more than cast iron, and its life as long as the building itself. Many high schools, colleges, and other institutions where laboratories are maintained are now supplied with this material, as well as many industrial buildings.

Office buildings, too, are being furnished with Corrosiron drains. San Francisco and Oakland have several examples of this type of construction. An Oakland newspaper, too, drains the waste from its photo engraving plant through Corrosiron pipe. In this connection it is interesting to note that Corrosiron photo engraving tanks, handling nitric acid in a San Francisco newspaper plant, still show the original tool marks after five years of service.

Another reason for the use of Corrosiron drain pipe in office buildings, is that a change in class of tenants, may bring about conditions under which cast iron pipe, originally satisfactory, will no longer serve, and it is well to prepare for such a possibility during construction. There are a number of instances in the Bay Cities where physicians, dentists and chemists occupy buildings originally planned for the clerical offices of corporations, attorneys and engineers, and their laboratories produce a condition under which the drain lines originall installed cannot be expected to endure.

The installation cost of Corrosiron drain lines is very little more than that of cast iron, since the labor cost, which is such a large proportion of the total, is not changed. Hence its frequent specification by architects, since they are able, by its use, to provide for any contingency that may affect the sewers of the buildings they design.

Canning and preserving plants, too, are discovering the need of acid proof pipe. One would not ordinarily consider fruit juice very corrosive, yet a large local glace fruit manufacturer recently found his cast iron waste lines almost entirely eaten through by the dilute fruit juice in his waste. Consequently, the new plant then under construction was equipped with Corrosiron lines to carry off the waste and washings from the fruit.

Storage battery installations, usual in telephone buildings, are being provided with acid proof drainage lines, as are charging stations and storehouses where batteries are kept.

Corrosiron drain pipe and fittings are made according to extra heavy soil pipe standards, hence they satisfy all plumbing codes. Although less strong than cast iron, Corrosiron pipe and fittings are amply strong for all drain line purposes, and an acid drain line of Corrosiron will stand 100 lbs. per square inch hydraulic pressure, if the joints are carefully caulked.

Los Angeles Office and Apartment Buildings

The ARCHITECT & ENGINEER

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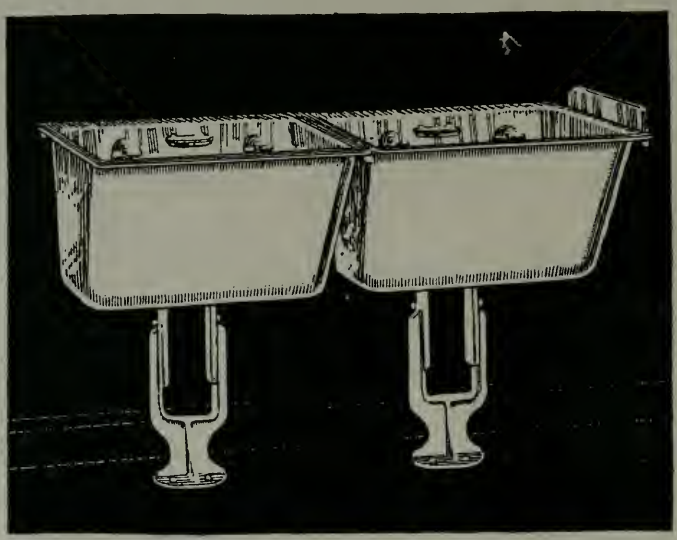

Would you wash your face

in the same tray you wash your clothes?

You could if it was a Pacific Porcelain Enameled Iron Laundry Tray. Its smooth, white surface is easy to keep spotless—just wipe out and rinse.

But you wouldn't wash your face in any unglazed laundry tray. You would see the scum and the absorbed moisture and filth from previous washings. Their foul or musty odors would repel you.

From the standpoint of sanitation and comfort it is as important that the tray your clothes are washed in be as clean as the lavatory in which you wash your face.

Specify Pacific Porcelain Enameled Iron Laundry Trays.

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Contents

VOL. LXXXII AUGUST, 1925 Number 2

COVER PICTURE—EDWARDS WILDEY BUILDING, LOS ANGELES

TAFT BUILDING, HOLLYWOOD, CALIFORNIA - - - - *Frontispiece*
Walker and Eisen,
Architects

RECENT WORK OF MESSRS. WALKER AND EISEN, LOS ANGELES - 51
With Fifty-five Plates of Buildings and Plans.

DOORWAYS IN THE "EAST SEVENTIES," MANHATTAN - - - 91
Viola Irene Cooper

STEEL WINDOWS FOR THE HOME - - - - - - - - - 97
R. D. Hughes

LESSONS OF THE SANTA BARBARA EARTHQUAKE - - - - - 104

COLOR IS MAKING PERMANENT STUCCO HOUSES INDIVIDUALISTIC 105
Frederick Jennings

WHY WIRE FOR AN ELECTRIC RANGE? - - - - - - - 106
M. W. Scanlon

ARCHITECT HAS PLAN TO RELIEVE TRAFFIC CONGESTION - - 109
Louis C. Mullgardt

EDITORIAL—GARDENS FOR PUBLIC DINING - - - - - - 112
Emerson Knight,
Landscape Architect

WITH THE ARCHITECTS - - - - - - - - - - - - 115

RECENT DEVELOPMENT IN PART CIRCLE CULVERT PRACTICE - - 121
J. C. Bidwell

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TAFT BUILDING, HOLLYWOOD, CALIFORNIA
WALKER AND EISEN, ARCHITECTS AND ENGINEERS

Frontispiece
The Architect and Engineer
August, 1925

THE
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AND
ENGINEER

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1925

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Recent Work of Messrs. Walker and Eisen

By F. A. EVANS, Manager Walker and Eisen

FEW California architects have enjoyed a wider range of commercial architecture than Messrs. A. R. Walker and P. A. Eisen, whose work is shown somewhat fully in this issue of The Architect and Engineer. Most of the buildings which this firm has designed are in the Metropolitan area of Los Angeles, although a number have been built in the Hollywood section. All of the office structures have been erected to the height limit as provided by the Los Angeles building laws, namely 150 feet, with variation of style from the modern Classic to Italian Renaissance and the popular present-day adaptation of the Spanish school.

Of the dozen or more prominent buildings illustrated, the California Lutheran hospital is probably the most highly specialized structure. Modern hospital design has become a matter of expert knowledge to a more or less extent, and many architects are attempting to interest themselves in the work, which is a good sign for it undoubtedly means better hospitals for Southern California.

The new California Lutheran hospital is to be located on South Hope street, Los Angeles. It will be a Class A building, nine stories in height, of reinforced concrete with stucco, pressed brick and art stone facing. It will have accommodations for 300 patients, besides the following auxiliary rooms: Four major operating rooms, two minor and one orthopedic; two anesthetzing rooms; two cystoscopic rooms; surgeon's dressing and scrub-up rooms; nurses' workrooms, supply and sterilizing rooms; extensive X-ray and pathological laboratories; physiotherap rooms; electro-cardiograph room, etc.

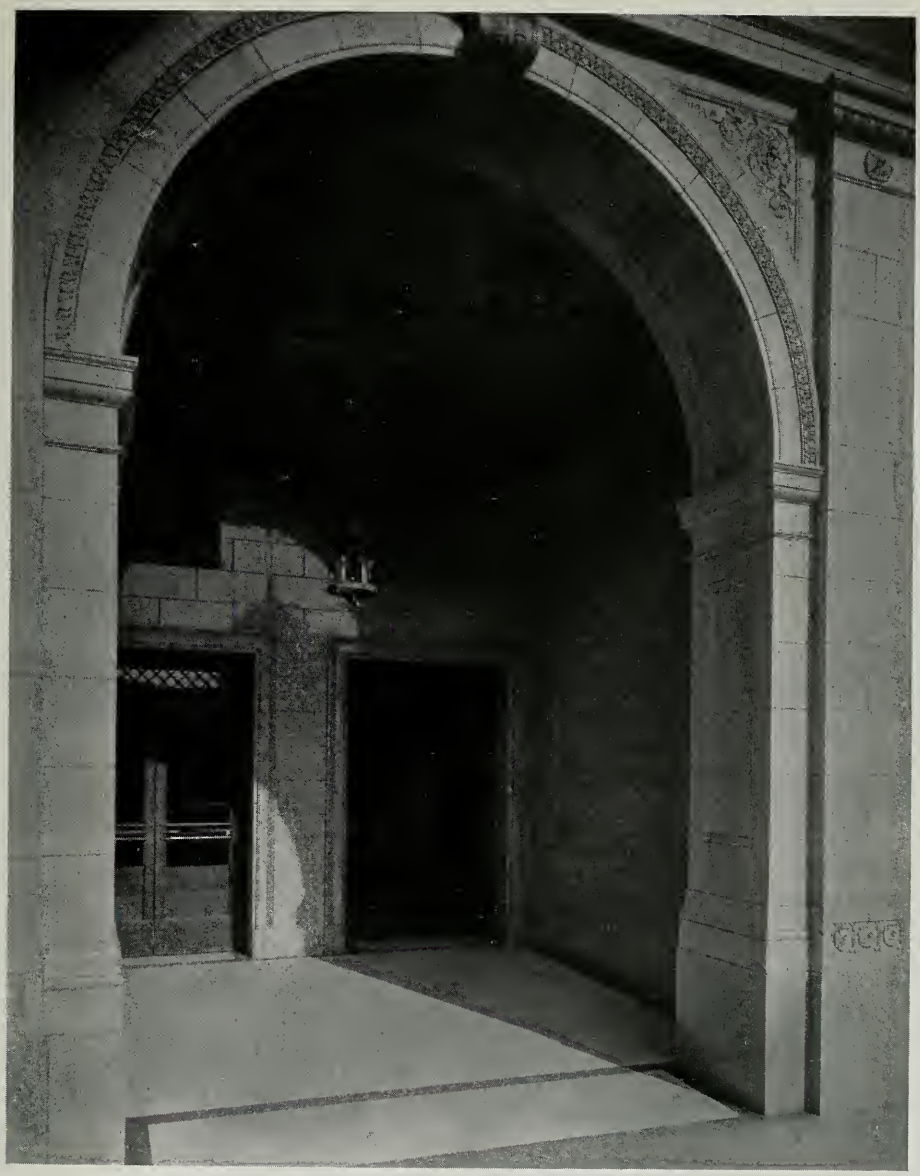
There will be a complete maternity department with two birth-rooms, labor rooms, preparation room, nursery, isolation nursery, milk preparation room, nurses' work room, sterilizing and scrub-up rooms, etc.

The ground floor will have a large chapel or assembly room, seating 240. Here provision will be made for the showing of motion pictures and stereoptician views. Other facilities on the ground floor will be a special nurses' dressing and locker room with accommodations for one hundred; an emergency receiving department with detention rooms for cases suspected of contagion; store rooms, for pharmaceutical and surgical supplies, records, storage, etc.

The kitchen facilities of the hospital will be centralized in a large kitchen of over 5000 square feet floor space on the ground floor of the

ENTRANCE, TAFT BUILDING, HOLLYWOOD
Walker and Eisen, Architects and Engineers

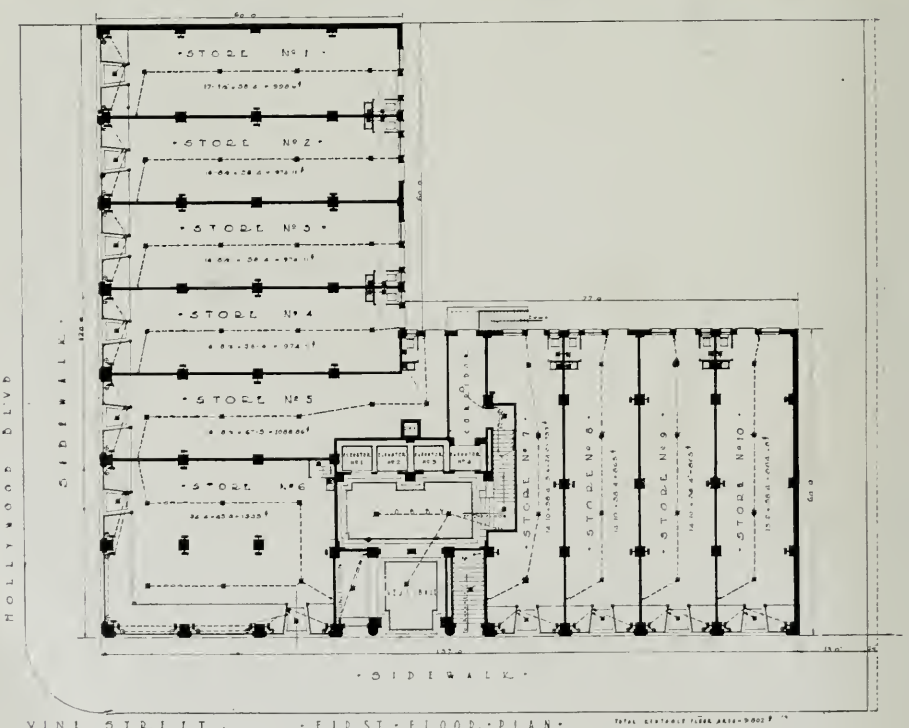
east wing. All patients' trays will be set in this kitchen and transported to the various floors by means of a battery of six automatic dumb waiters. Trays will be returned by a subveyor traveling from the diet service room on each floor to the dishwashing room in the kitchen. This subveyor shifts automatically from vertical to horizontal travel on reaching the ground floor, thus obviating all carrying of returning trays in the kitchen. A special study has been made of the handling, storing, preparation and serving of food, with a view to saving of time and labor and getting the food in the best possible condition to the patient.



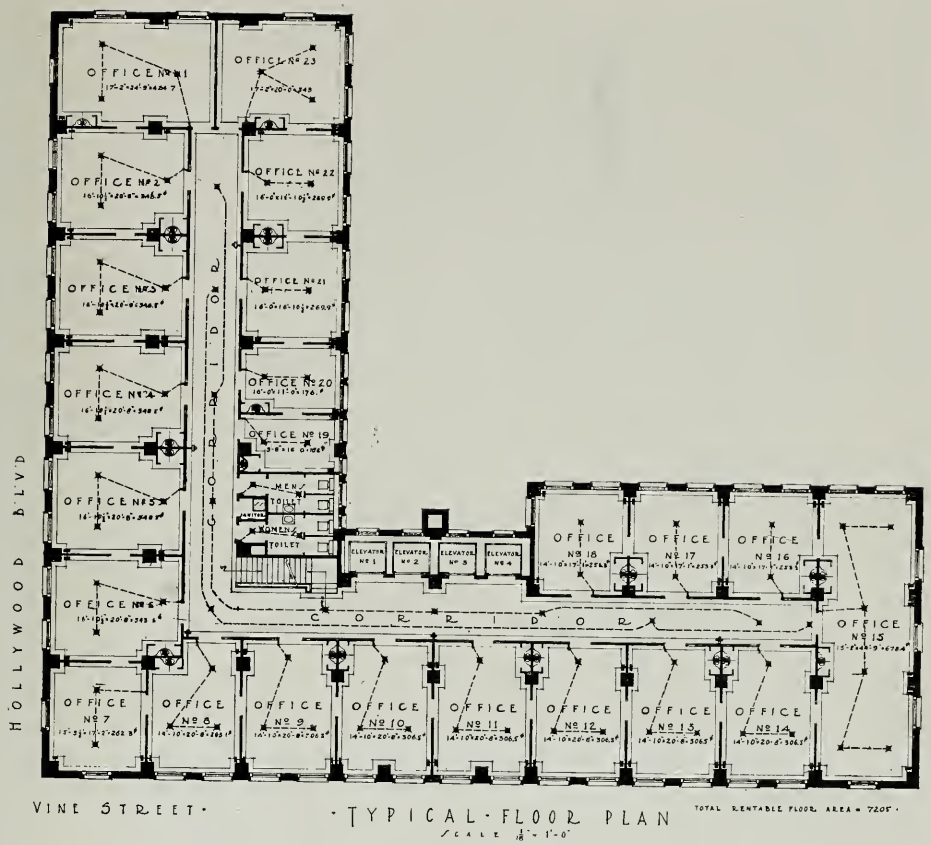
ENTRANCE DETAIL, TAFT BUILDING, HOLLYWOOD
Walker and Eisen, Architects and Engineers

The entrance lobby will be a feature of the new hospital. A high ceiling, Batchelder tile walls, marble floor and counters, mahogany woodwork and bronze grill work will give it an air of loftiness and permanence. From this lobby a double stairway of ten steps will lead to the main or administrative floor and elevator foyer. On one side is the pharmacy, equipped like a high-grade retail drug store; on the other side the cashier's office and general bookkeeping offices. Directly opposite the elevator entrances is a flower booth to be operated as a concession by a leading florist. Here, on marble counters, a beautiful display of flowers will serve as an attractive decoration to the elevator foyer.

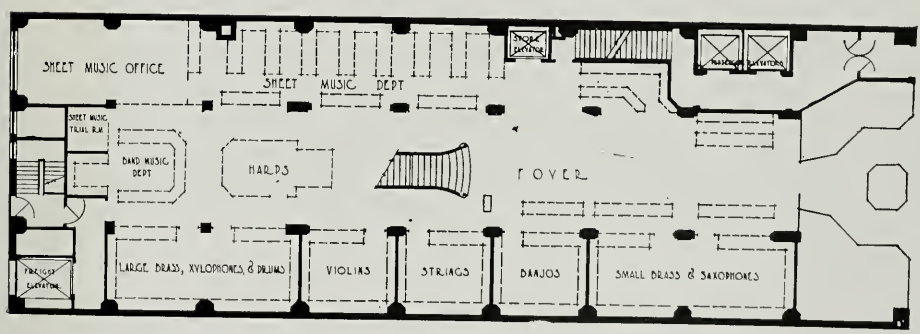
ELEVATOR LOBBY, TAFT BUILDING, HOLLYWOOD
Walker and Eisen, Architects and Engineers



FIRST FLOOR PLAN, TAFT BUILDING, HOLLYWOOD
Walker and Eisen, Architects and Engineers

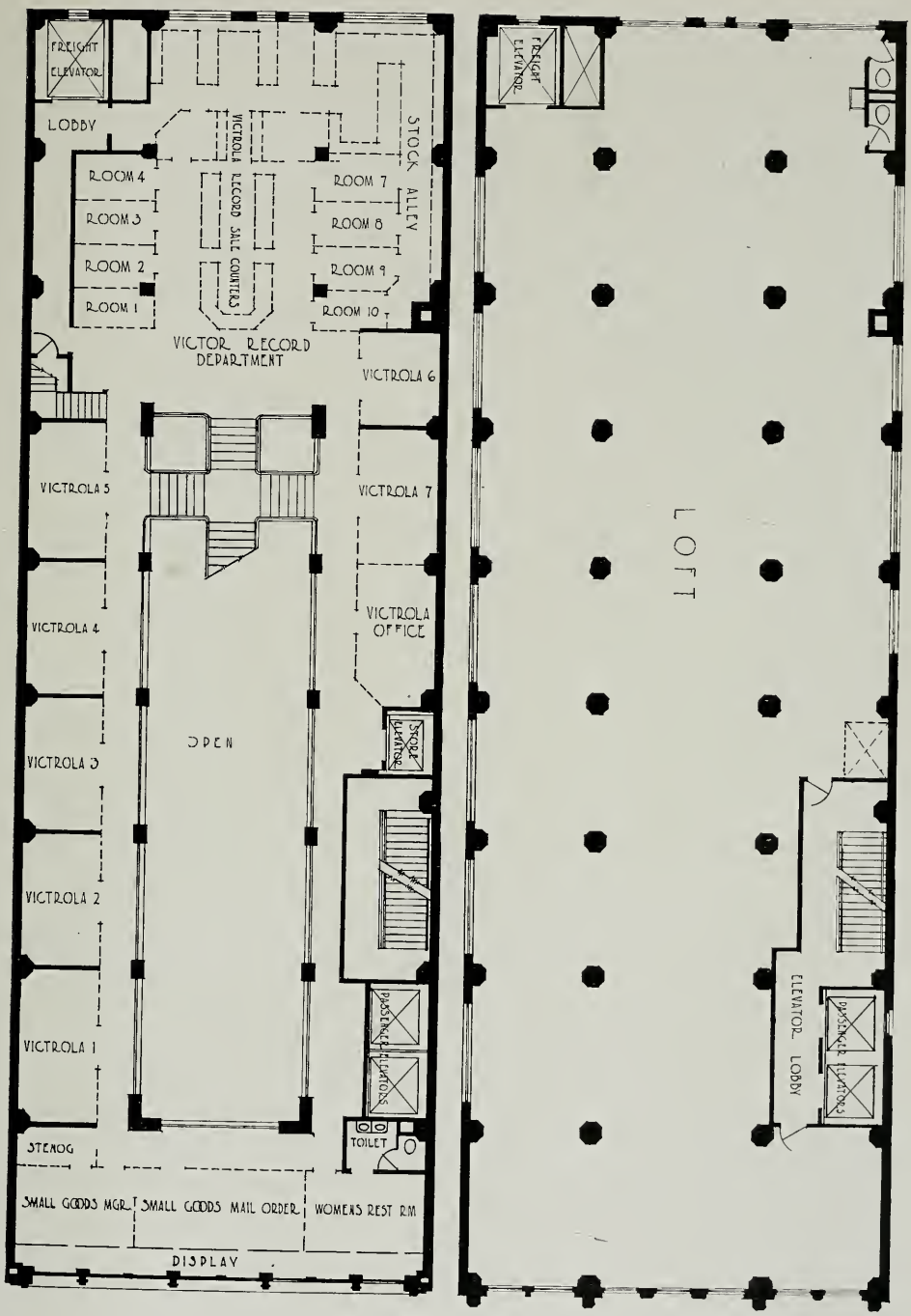


TYPICAL OFFICE PLAN, TAFT BUILDING, HOLLYWOOD
Walker and Eisen, Architects and Engineers



FIRST FLOOR PLAN, WURLITZER BUILDING, LOS ANGELES
Walker and Eisen, Architects and Engineers

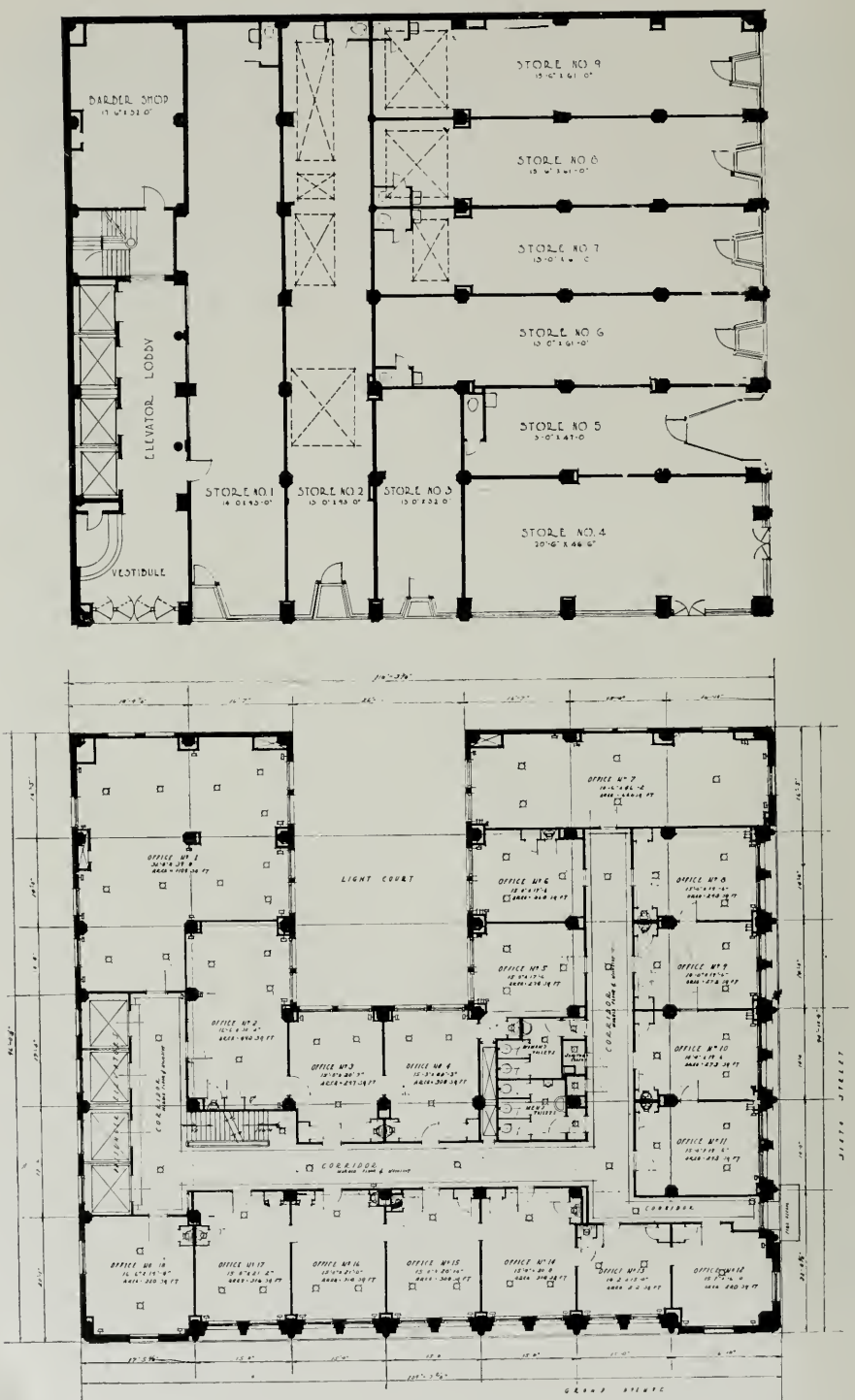
WURLITZER BUILDING. LOS ANGELES
WALKER AND EISEN, ARCHITECTS AND ENGINEERS



MEZZANINE AND TYPICAL FLOOR PLANS, WURLITZER BUILDING, LOS ANGELES
WALKER AND EISEN, ARCHITECTS AND ENGINEERS

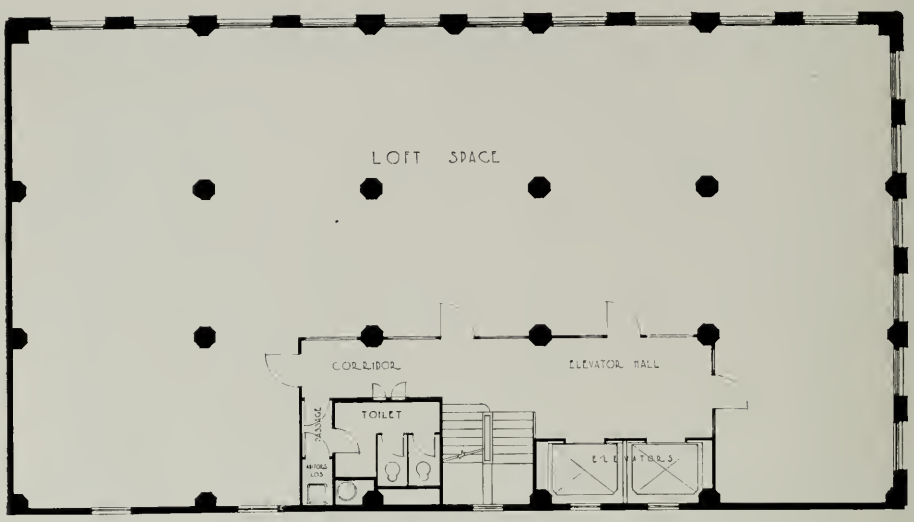
EDWARDS & WILDEY BUILDING, LOS ANGELES
WALKER AND EISEN, ARCHITECTS AND ENGINEERS

EDWARDS & WILDEY BUILDING, LOS ANGELES
WALKER AND EISEN, ARCHITECTS AND ENGINEERS

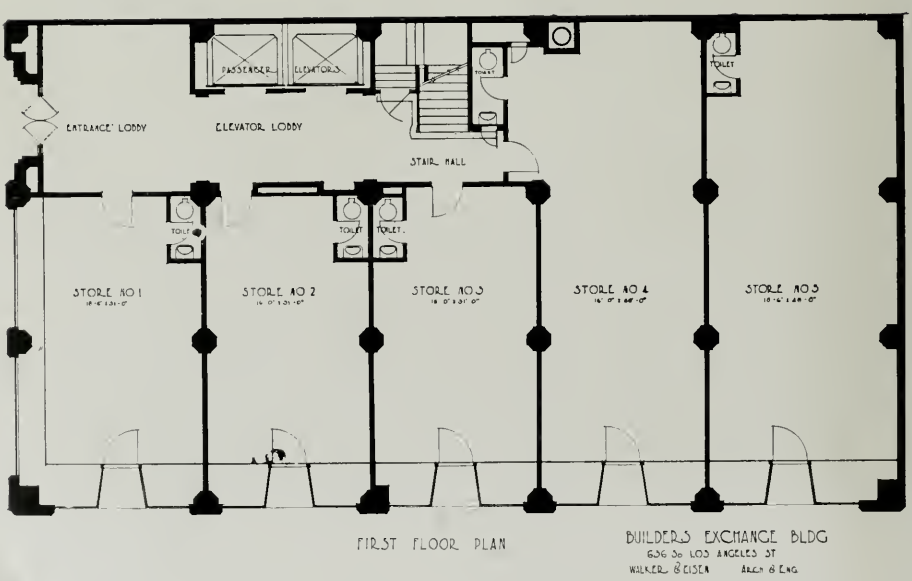


FIRST AND TYPICAL FLOOR PLANS, EDWARDS & WILDEY BUILDING, LOS ANGELES
Walker and Eisen, Architects and Engineers

BUILDERS EXCHANGE BUILDING, LOS ANGELES
WALKER AND EISEN, ARCHITECTS AND ENGINEERS

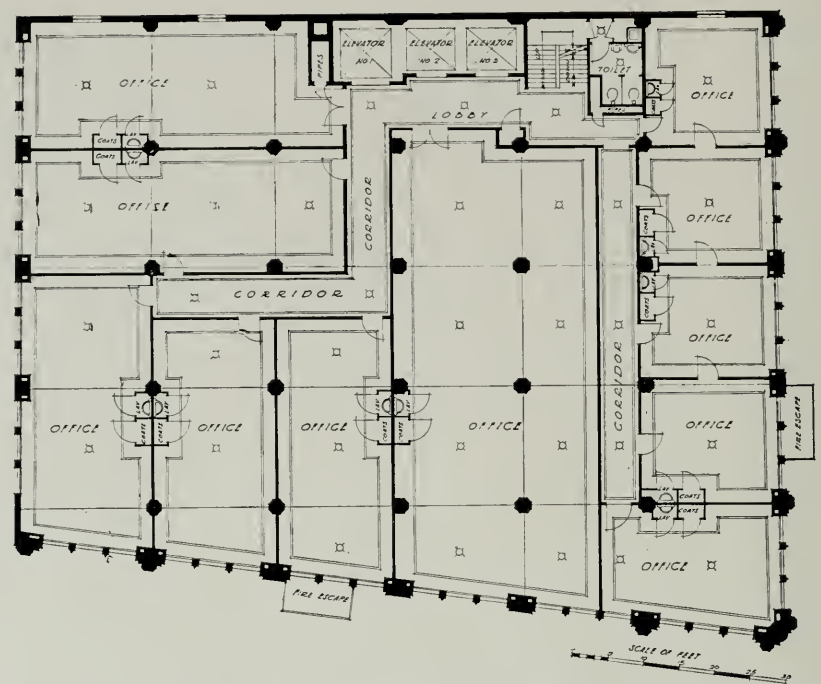


TYPICAL FLOOR PLAN, BUILDERS EXCHANGE BUILDING, LOS ANGELES
Walker and Eisen, Architects and Engineers

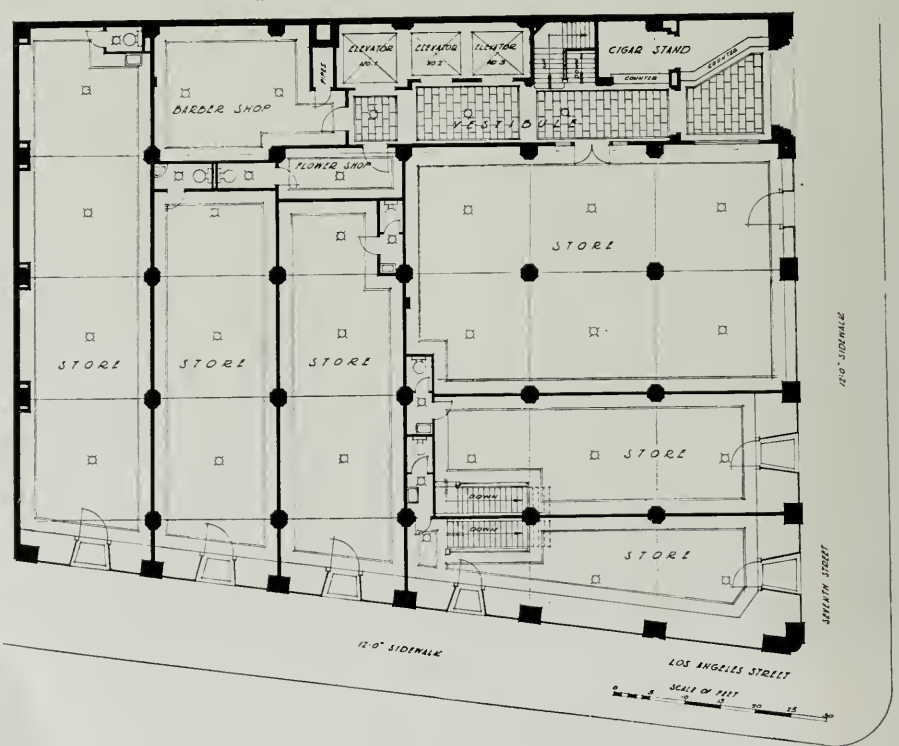


GROUND FLOOR PLAN, BUILDERS EXCHANGE BUILDING, LOS ANGELES
Walker and Eisen, Architects and Engineers

TRANSPORTATION BUILDING, LOS ANGELES,
WALKER AND EISEN, ARCHITECTS AND ENGINEERS



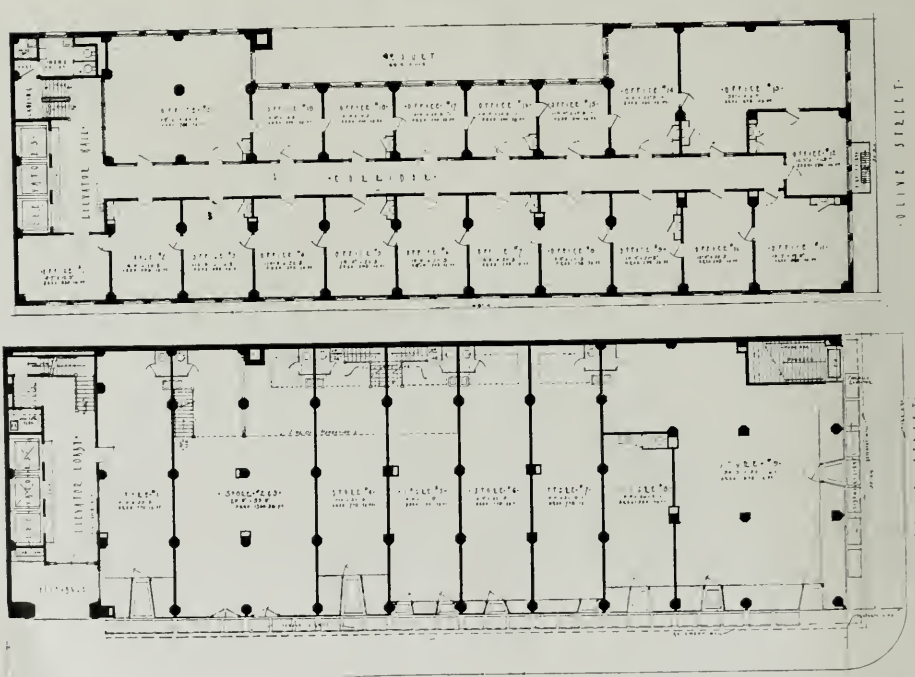
TYPICAL OFFICE PLAN, TRANSPORTATION BUILDING, LOS ANGELES
Walker and Eisen, Architects and Engineers



FIRST FLOOR PLAN, TRANSPORTATION BUILDING, LOS ANGELES
Walker and Eisen, Architects and Engineers

COMMERCIAL EXCHANGE BUILDING, LOS ANGELES
WALKER AND EISEN, ARCHITECTS AND ENGINEERS

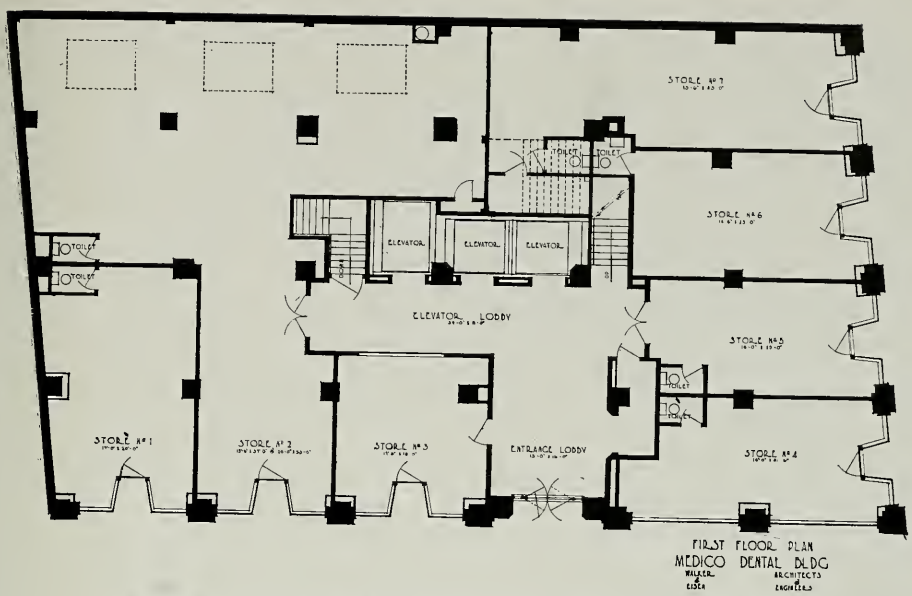
COMMERCIAL EXCHANGE BUILDING, LOS ANGELES
Walker and Eisen, Architects and Engineers



TYPICAL AND FIRST FLOOR PLANS, COMMERCIAL EXCHANGE BUILDING, LOS ANGELES
Walker and Eisen, Architects and Engineers

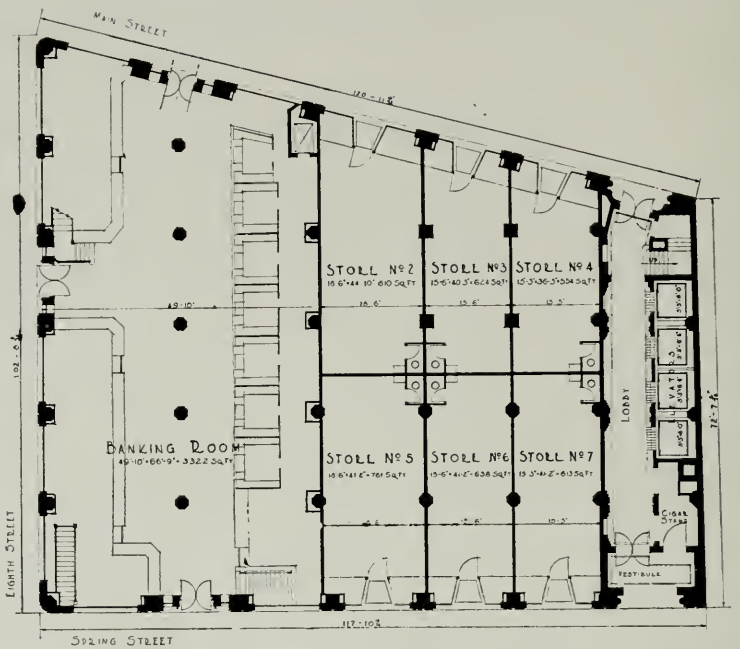
MEDICO-DENTAL BUILDING, LOS ANGELES, CALIFORNIA
WALKER AND EISEN, ARCHITECTS AND ENGINEERS

TYPICAL FLOOR PLAN, MEDICO-DENTAL BUILDING, LOS ANGELES
ARCHITECTS AND ENGINEERS
WALKER AND EISEN.

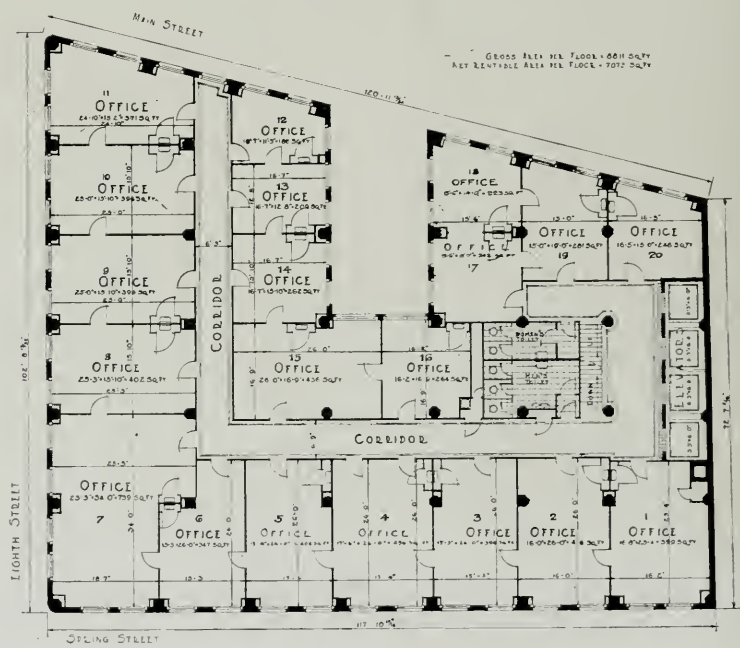


FIRST FLOOR PLAN, MEDICO-DENTAL BUILDING, LOS ANGELES
Walker and Eisen, Architects and Engineers

NATIONAL CITY BANK, LOS ANGELES
Walker and Eisen, Architects and Engineers



FIRST FLOOR PLAN, NATIONAL CITY BANK BUILDING, LOS ANGELES
Walker and Eisen, Architects and Engineers



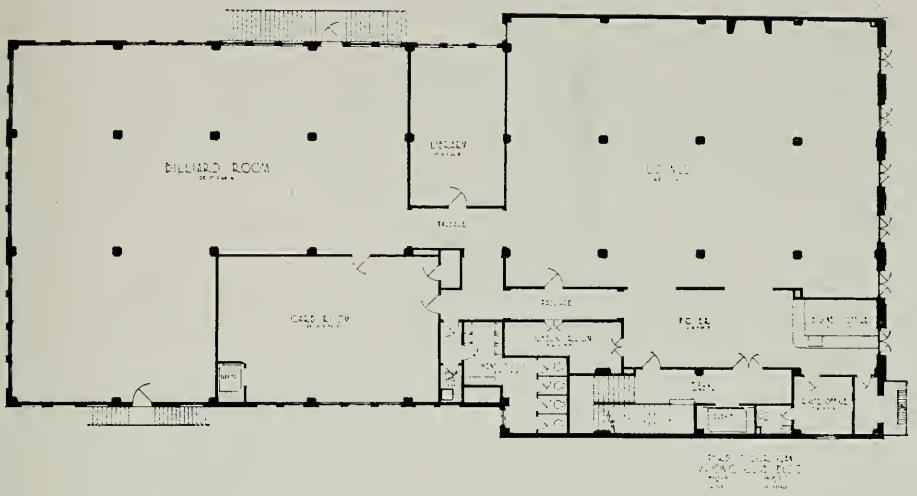
TYPICAL FLOOR PLAN, NATIONAL CITY BANK BUILDING, LOS ANGELES
Walker and Eisen, Architects and Engineers

NATIONAL CITY BANK BUILDING, LOS ANGELES
WALKER AND EISEN, ARCHITECTS AND ENGINEERS

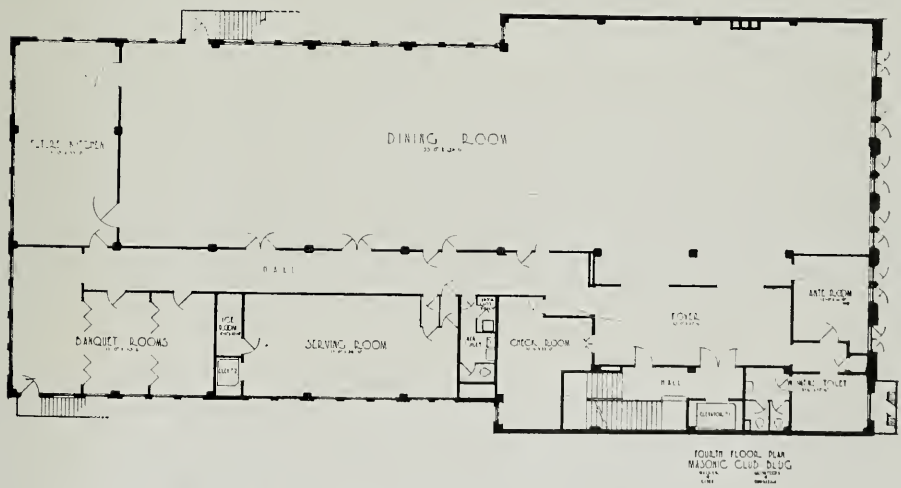
NATIONAL CITY BANK BUILDING, LOS ANGELES
WALKER AND EISEN, ARCHITECTS AND ENGINEERS

BANKING ROOM, NATIONAL CITY BANK BUILDING, LOS ANGELES
WALKER AND EISEN, ARCHITECTS AND ENGINEERS

MASONIC CLUB BUILDING, LOS ANGELES, CALIFORNIA
WALKER AND EISEN, ARCHITECTS AND ENGINEERS

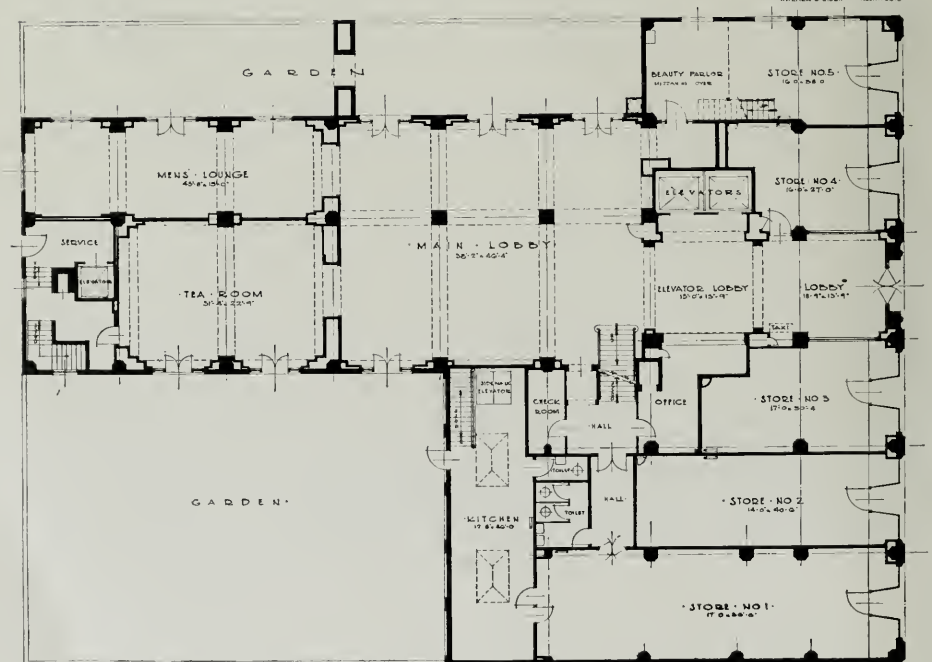


THIRD FLOOR PLAN, MASONIC CLUB BUILDING, LOS ANGELES
Walker and Eisen, Architects and Engineers



FOURTH FLOOR PLAN, MASONIC CLUB BUILDING, LOS ANGELES
Walker and Eisen, Architects and Engineers

TYPICAL FLOOR PLAN
HOLLYWOOD PLAZA HOTEL
1633-41 VINE ST. HOLLYWOOD CAL.
WALKER & EISEN — ARCHITECTS

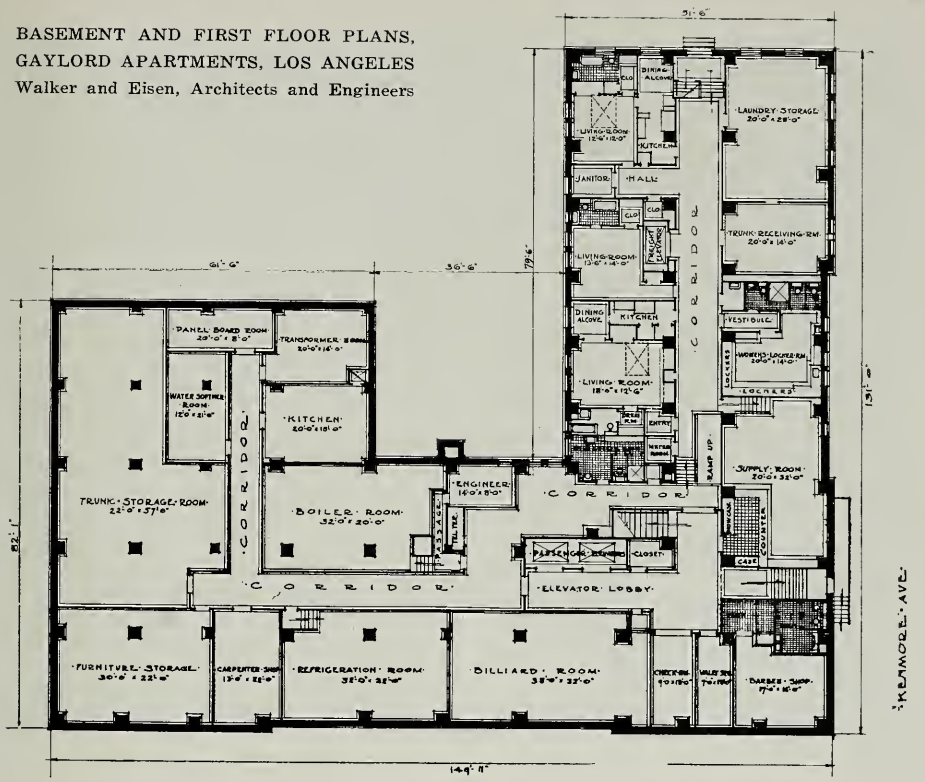


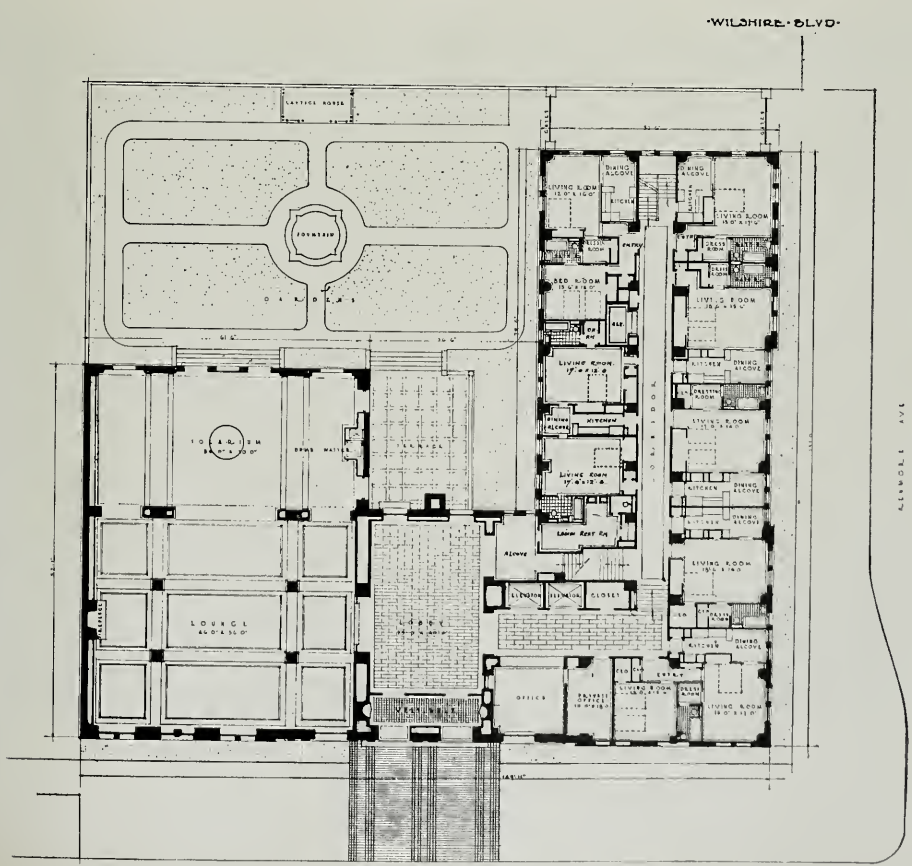
PLANS, HOLLYWOOD PLAZA HOTEL, HOLLYWOOD
Walker and Eisen, Architects and Engineers

HOLLYWOOD PLAZA HOTEL, HOLLYWOOD, CALIFORNIA
WALKER AND EISEN, ARCHITECTS AND ENGINEERS

GAYLORD APARTMENTS, LOS ANGELES, CALIFORNIA
WALKER AND EISEN, ARCHITECTS AND ENGINEERS

BASEMENT AND FIRST FLOOR PLANS, GAYLORD APARTMENTS, LOS ANGELES
Walker and Eisen, Architects and Engineers

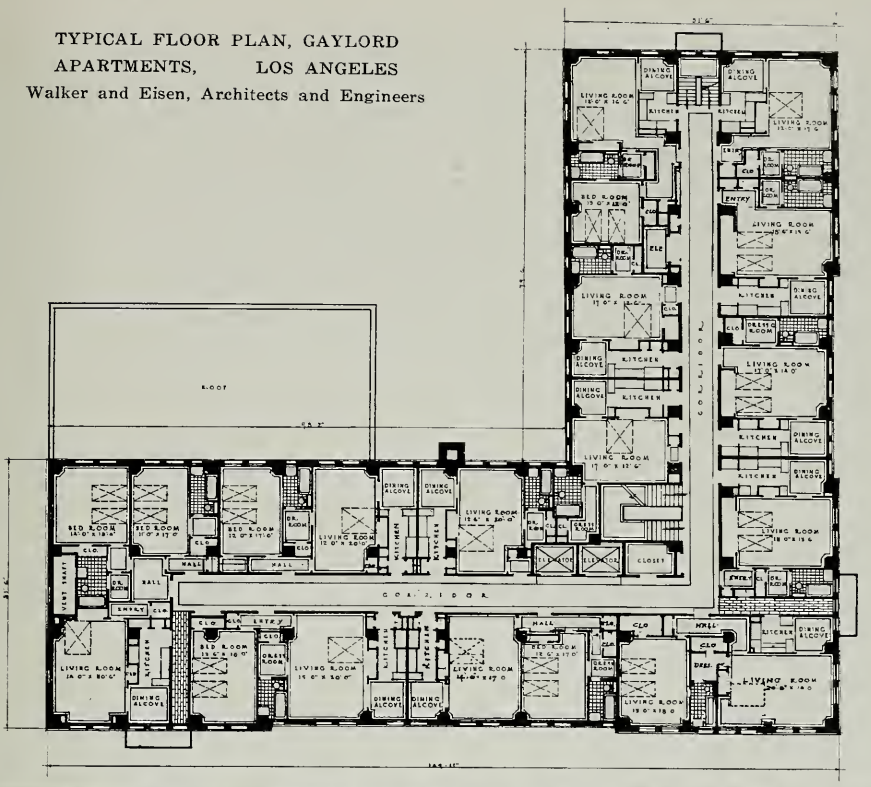




LOUNGE, GAYLORD APARTMENTS, LOS ANGELES
Walker and Eisen, Architects and Engineers

LOUNGE, GAYLORD APARTMENTS, LOS ANGELES
Walker and Eisen, Architects and Engineers

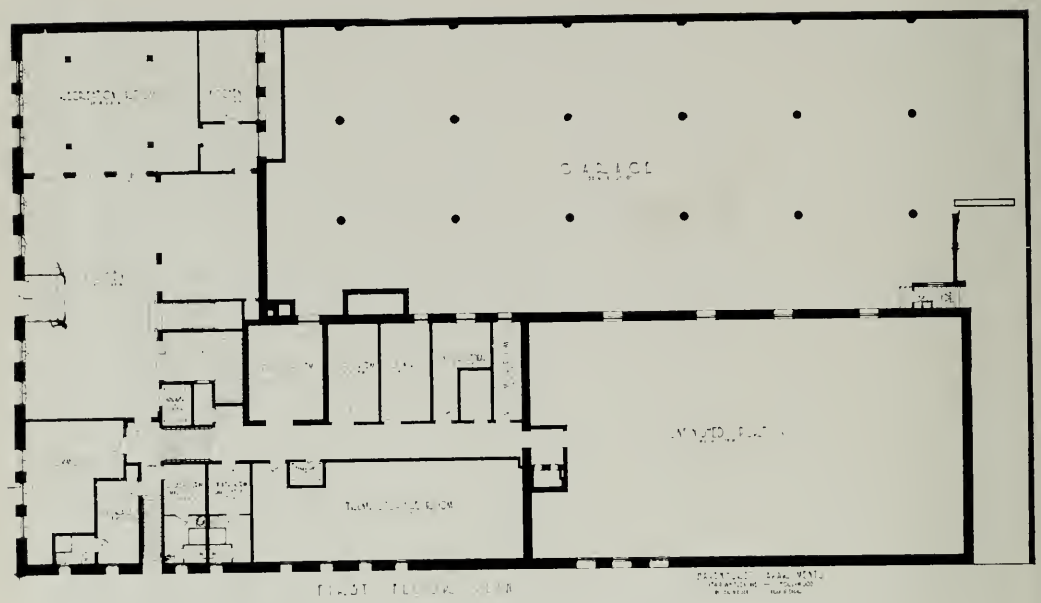
TYPICAL FLOOR PLAN, GAYLORD APARTMENTS, LOS ANGELES
Walker and Eisen, Architects and Engineers



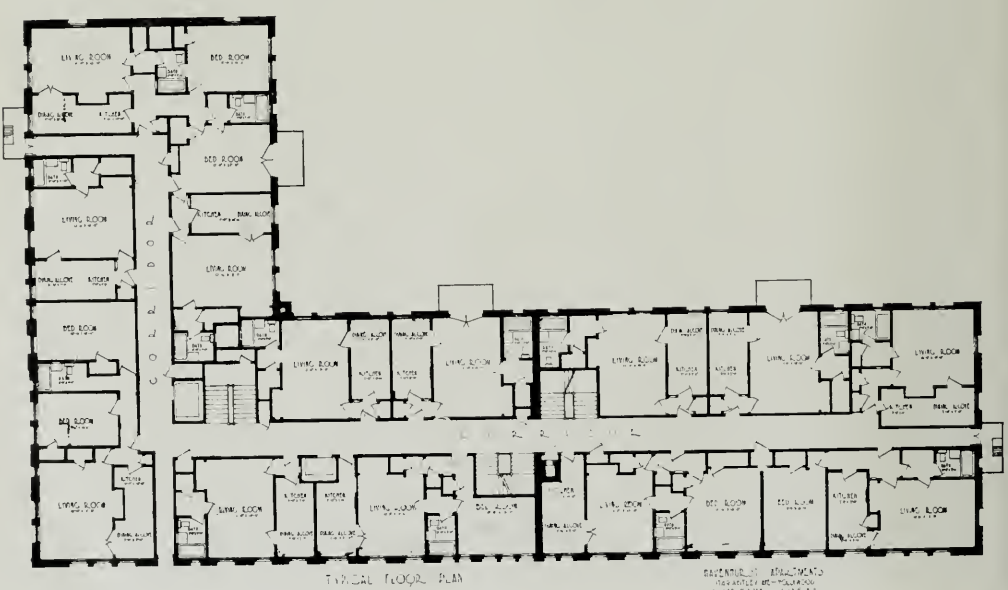
SOLARIUM, GAYLORD APARTMENTS, LOS ANGELES
Walker and Eisen, Architects and Engineers

HAVENHURST APARTMENTS, HOLLYWOOD, CALIFORNIA
WALKER AND EISEN, ARCHITECTS AND ENGINEERS

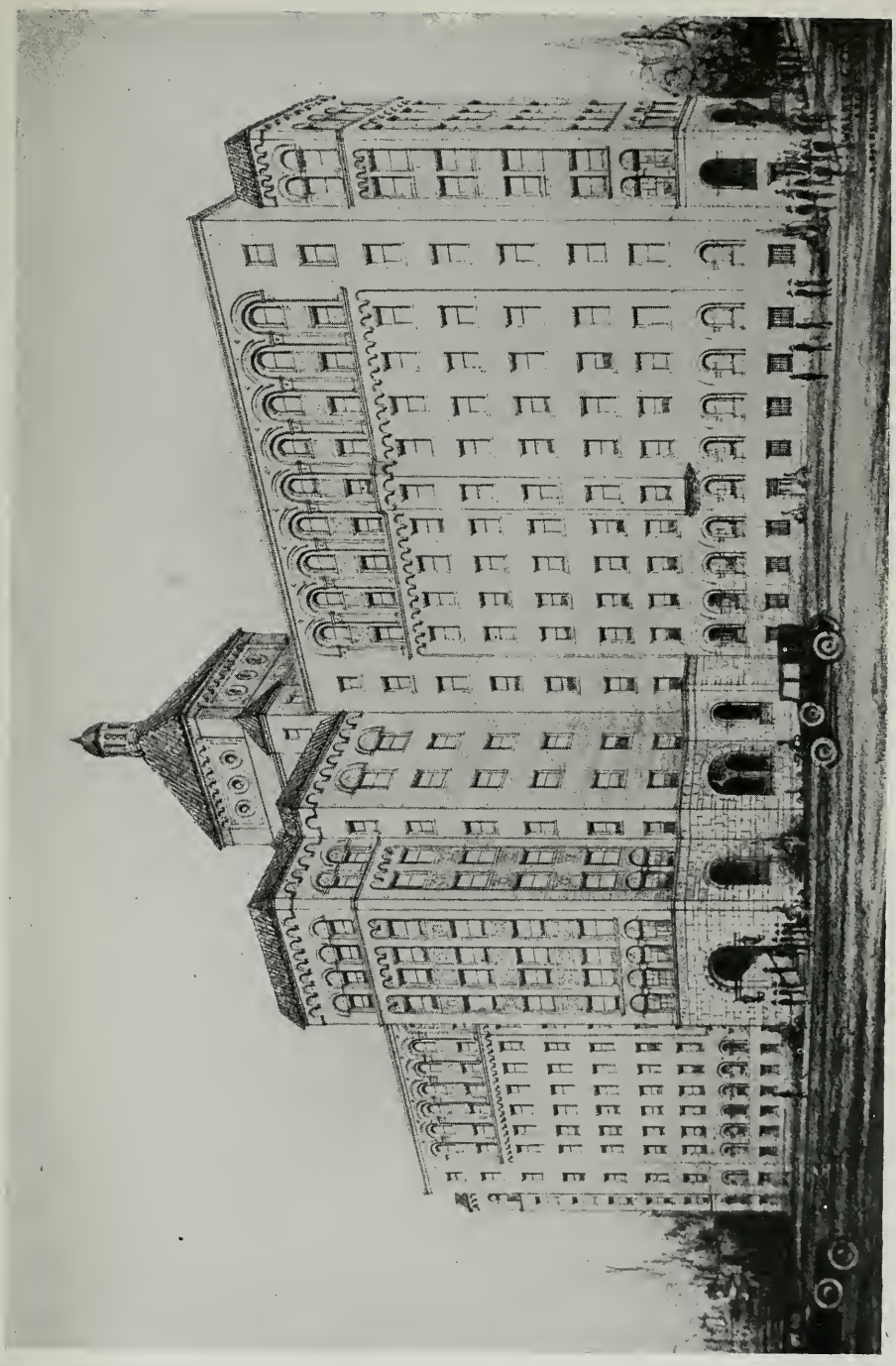
GARDEN VIEW, HAVENHURST APARTMENTS, HOLLYWOOD
WALKER AND EISEN, ARCHITECTS AND ENGINEERS



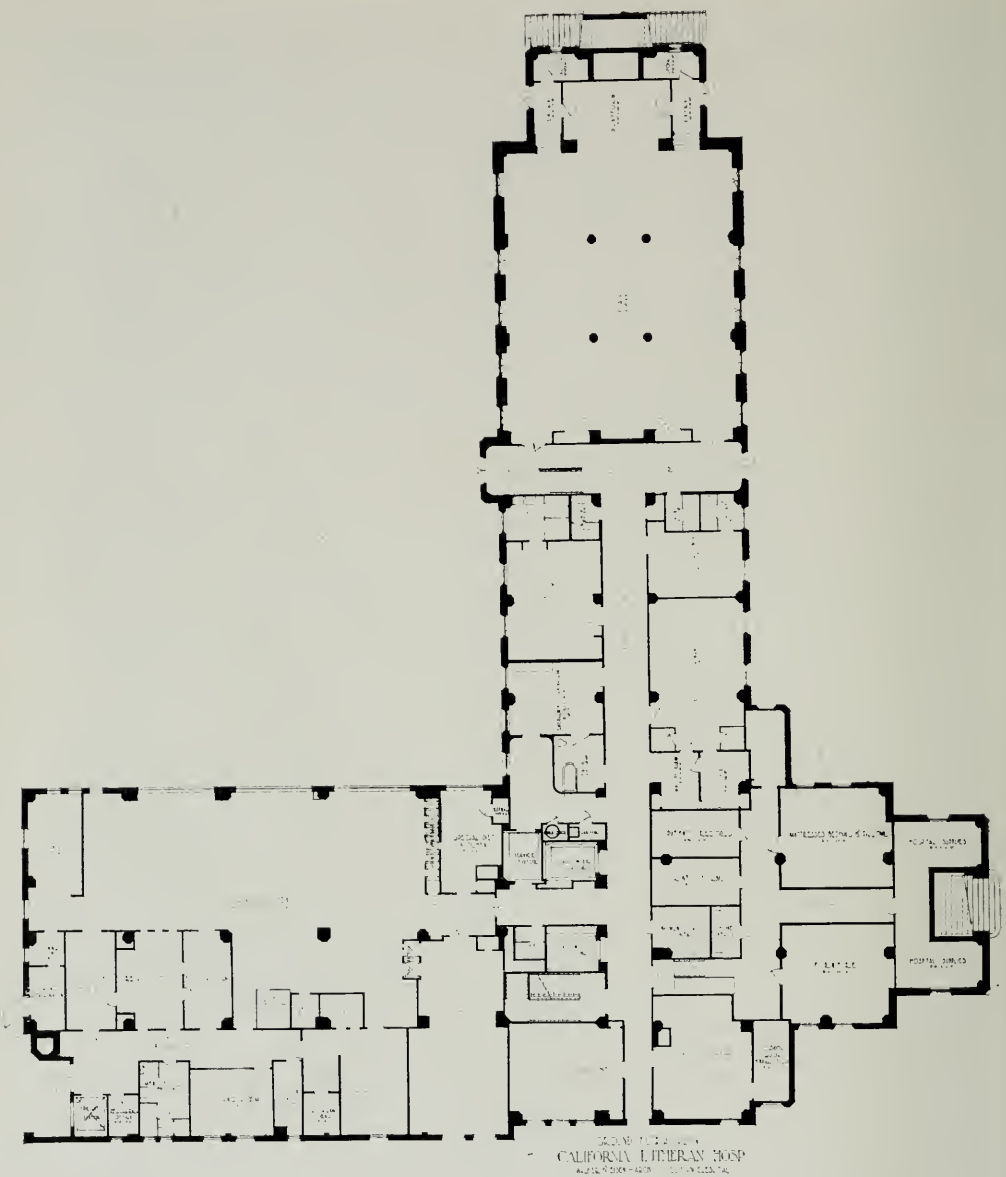
FIRST FLOOR PLAN, HAVENHURST APARTMENTS, HOLLYWOOD
Walker and Eisen, Architects and Engineers



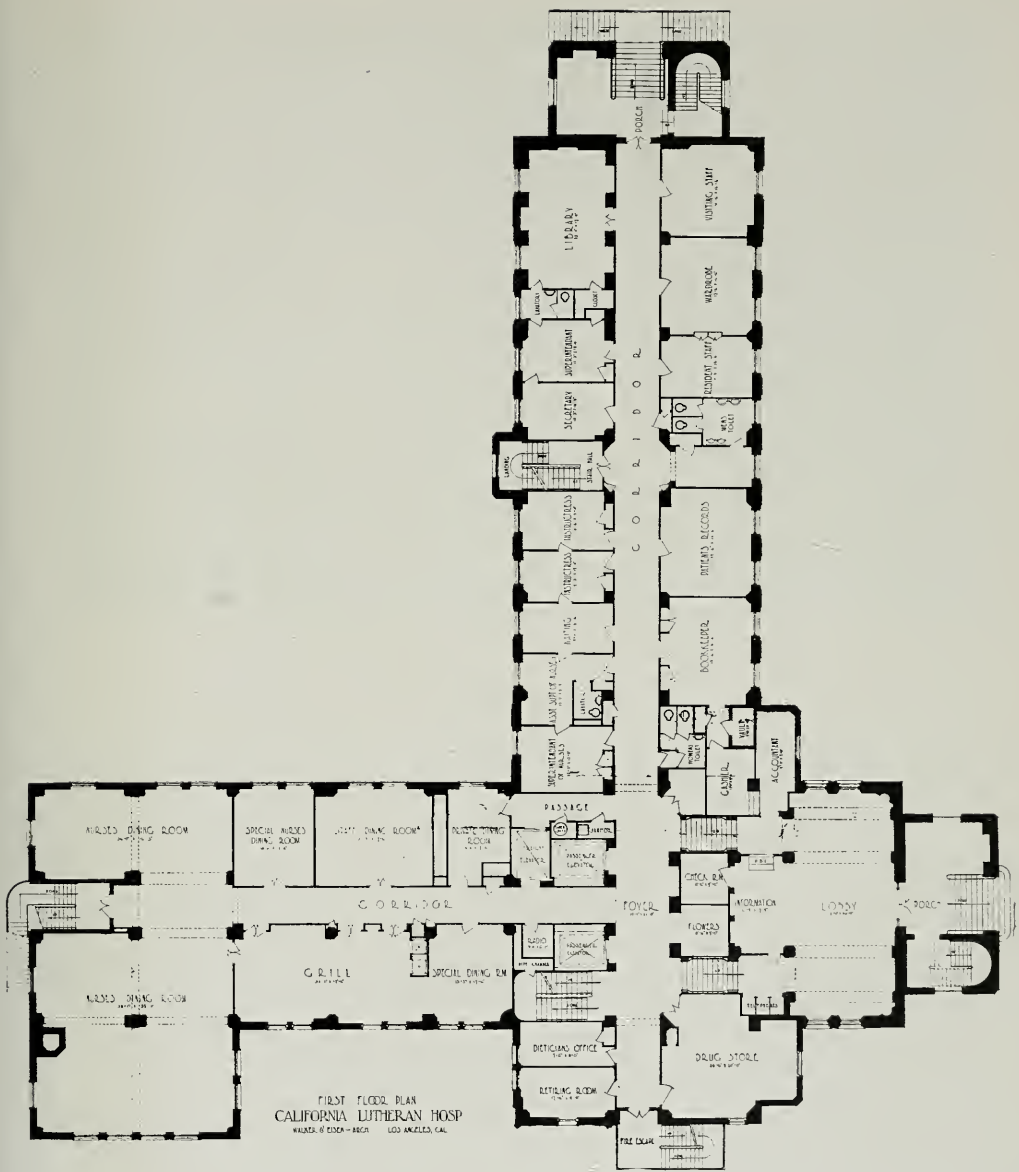
TYPICAL FLOOR PLAN, HAVENHURST APARTMENTS, HOLLYWOOD
Walker and Eisen, Architects and Engineers



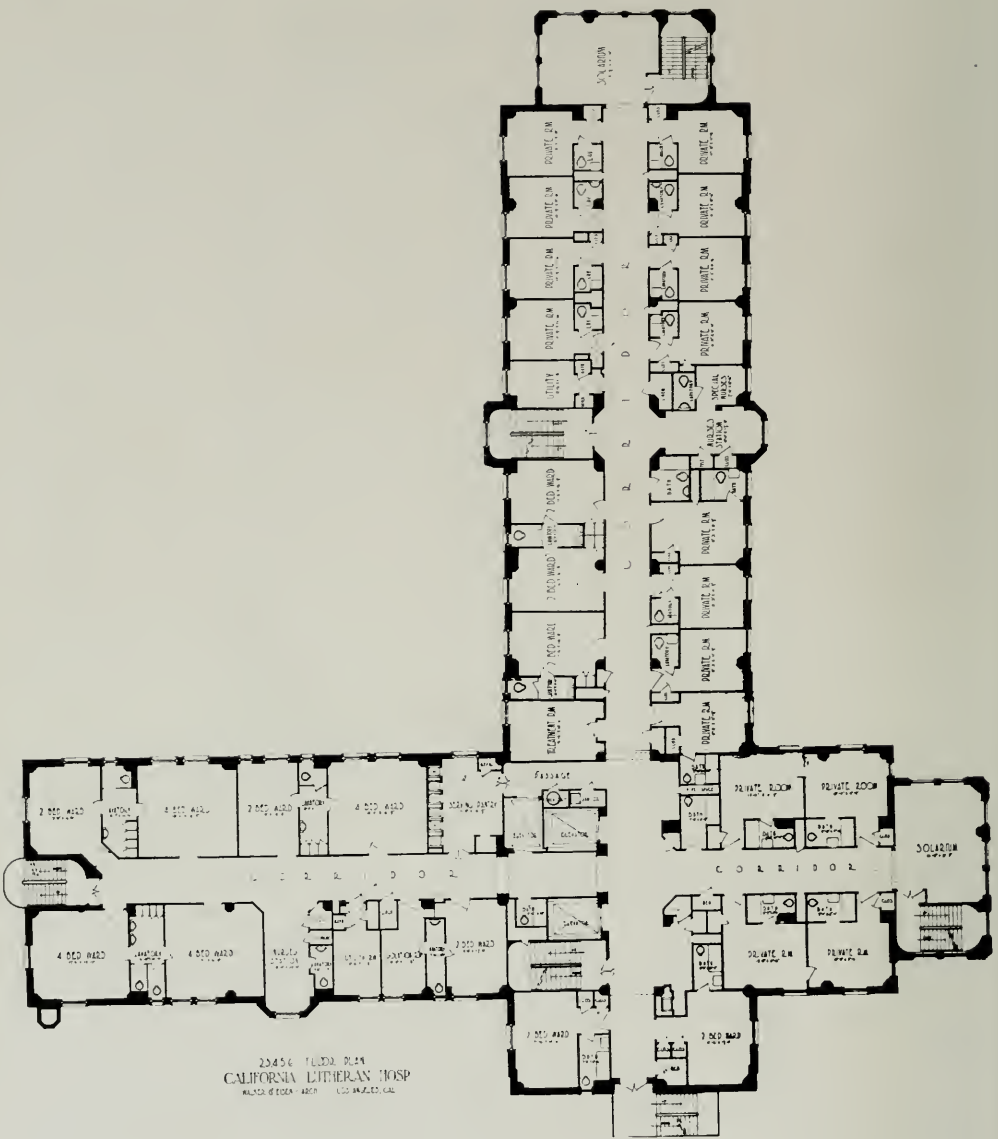
CALIFORNIA LUTHERAN HOSPITAL, LOS ANGELES
WALKER AND EISEN, ARCHITECTS AND ENGINEERS



GROUND FLOOR PLAN, CALIFORNIA LUTHERAN HOSPITAL
WALKER AND EISEN, ARCHITECTS AND ENGINEERS



FIRST FLOOR PLAN, CALIFORNIA LUTHERAN HOSPITAL
WALKER AND EISEN, ARCHITECTS AND ENGINEERS



TYPICAL FLOOR PLAN, CALIFORNIA LUTHERAN HOSPITAL
WALKER AND EISEN, ARCHITECTS AND ENGINEERS

HAVENHURST APARTMENTS, LOS ANGELES
Walker and Eisen, Architects and Engineers

The Taft building, a picture of which appears as the frontispiece, is dignified and well proportioned, the plans showing careful study with a view to providing spacious well-lighted offices. The Wurlitzer building is of the elongated Classic type with base, shaft and caps in good proportion. One of the most interesting pictures shown in the presentation is the Edwards-Wildey building—a really charming design—with a well balanced arcaded effect for the first story and an abundance of rich detail for the upper stories. The National City Bank building is correctly proportioned and quite harmonious in treatment. The Masonic Club building, possesses that restful atmosphere so desirable in a building of this type while the Gaylord apartments suggest a Spanish treatment that is just now very popular in domestic architecture.

* * * *

Report on Alameda School

Messrs. C. B. Wing, C. H. Snyder and H. J. Brunnier, engineers appointed to investigate the recent collapse of steel girders in the gymnasium and auditorium of the Alameda High School, have made their report which absolves the architect, Mr. Carl Werner, from blame because of faulty design. The engineers report that all trusses, purlins and girders were found to be of sufficient strength and properly supported. However, the engineers, in view of experience gained through viewing the effects of the recent earthquake in Santa Barbara, have deemed it wise to suggest as an additional precaution, the insertion of lateral bracing of the gymnasium and auditorium trusses so that no movement of the roof can possibly take place in the event of an earthquake.

ROMANESQUE COLUMNS GIVE THIS "EAST SEVENTIES" DOORWAY HEIGHT AND DIGNITY

Doorways in the "East Seventies," Manhattan

By VIOLA IRENE COOPER

A French doorway with simple architectural treatment.

GROWTH in large communities has nearly always taken place in sectional waves. Traffic follows a beaten track for an indeterminable period of time; then, suddenly, by some unexplained law of movement, it will "jump" without a word to another street several blocks away, leaving, as a result, one section of a city belonging to one period of time and another belonging to another period. Thus, looking backward over our cities, we can trace the movement of domestic architecture over one part of the city to another.

The situation with regard to cities in general has been particularly exemplified in Manhattan. Looking upon the city with an imaginary bird's eye view we find whole sections of the borough as distinctly marked by period of time in which they were evolved as though they had been eroded from a block of chalk and definitely labeled. Moving on uptown, from lower Manhattan, we come to sections of more recent development and it is these we designate as "modern" for want of a better term and because we are unable to distinguish in the style any outstanding and characteristic features.

In the early part of the 19th century, although there were few buildings in that part of New York City known as Manhattan which might have been called noteworthy, at least the general effect was nondescript rather than actually bad. With the sudden growth of population, however, which nearly swept the city off its feet in the middle, and toward the end of the 19th century, anybody who could draw became an architect. The need for houses was great. Regardless of education or training, men began designing and building houses which had but the one idea behind them, that of providing a roof over someone's head. They seized upon whatever might be called a "style" and pursued it to the extreme limit of monotonous repetition, or until the spontaneous movement of trade to another street jarred them into some sort of a change in design. The result is that in the city there are whole blocks of houses exactly alike, and if we take any section of the city built during this period we shall find the evidences of their work.

When the eighties came along, American architecture was struggling to free itself from the Queen Anne period and it was this struggle for freedom which precipitated the long period of French influence upon American architecture, and particularly in New York, which, beginning then has continued up to the present time.

If given enough dross, however, there is bound, in a material, to be some refinement.

A doorway garnished with flowers and greens.

ENTRANCE TO A FIFTH AVENUE MANSION, NEW YORK
Note reflection of trees in glass.

Certain of our men, in open revolt against the grotesque designs of the would-be architects of the earlier period, fled to Europe for education. They returned a little while later with the stamp of L'Ecole des Beaux Arts full upon them, but the building activity into which they plunged, carrying with them and into the architecture evolving under their hands, as they did, the influence and tradition of the French school from which they had just returned, showed a marked change for the better. The progress made in the beginning was not great, but it was progress.

A COLONIAL DOORWAY OF CHARM, HOUSE OF MR. R. F. BROWN, NARBERTH, PA.
W. K. Durham, Architect

When 1900 arrived the records of the French school showed that during the latter half of the twenty years which had just passed, more than half the entire number of students in L'Ecole des Beaux Arts were Americans, not Frenchmen. This could mean but one thing, that the influence which had already been felt would be bound to continue and that the new century would bring into even greater vogue the influence of the French school, with the danger that instead of a few striking examples of the French school there would be many lesser examples.

But the responsibility for the improvement in architecture in the eighties and nineties did not rest wholly upon the influence of education. A great part of it lay with the men who so courageously took matters into their own hands. It is quite a fact that an edifice no matter whether it be a dwelling or a building of state will reflect the personality of the architect who has made the plans. Consequently, if in a given number of years we have more architects with dominant personalities, men (or women, for that matter) whose characteristics are strong enough to impress themselves upon the work they are doing, than we have in another given period, it is safe to say the work of the one period will reflect greater evidences of style and character than that of the

AN "EAST SEVENTIES" DOORWAY OF COLONIAL FEELING
House of Mr. Arthur C. Train, Noted Story Writer

other. The expression of the one group may not be any more pleasing or approach any more nearly a standard which might be called noteworthy, than the other, but the force of personality will be felt.

Fortunately, the men who went to Europe were men of very high calibre. It took the ranks of the mediocre and the untrained to produce them, but when they did come forth we had Stanford White, Richard Morris Hunt, Richard Howlands Hunt, George B. Post, Thomas Hastings, and many, many others who rose to renown in their chosen profession, men who combined genius with education, and talent with ability. In the effort to create something new and spontaneous, yet something which would, at the same time, be based upon the best tradi-

tions of the past, they struck forth on new trails. Though they may not have succeeded wholly in their undertaking, they certainly gave to American architecture an impetus wholly unknown to it in the past.

Looking over the Borough of Manhattan we find that the peak and the cream of their work culminated, in residential architecture at least, in the territory above Fifty-seventh street, and in a very interesting way in the territory known as the East Sixties and Seventies. Seeking to enrich, but at the same time endeavoring to abstain from useless ornament, striving to work in metal, and stone, and wood, in the single effort to produce from the melting pot of what had hitherto been known, and laughed at, as American architecture, they sought to give to the world something that might in truth be a contribution to architecture. Looking through the homes in this territory we find them combining element after element, using Gothic, Tudor and Italian alike, joining Italian architecture with Moorish, French Renaissance with Greek, and so on, but all in the hope of achieving something which would be worth while. That they did not attain, in each instance, the end at which they aimed is not so important. The work of each man stands forth notably, and the important feature is that from their work will come the impetus which will carry American architecture to a place in the architectures of the world which will truly be hers.

In the residences in the East Seventies we find many qualities which charm and delight. Looking at the doorways, we find the indices to the houses. They are of all sorts and varieties, but looking at the effort behind each, the effort toward something new and truly worthy of the race, you will find that the differences are but the differences one might expect to find in a group of friends all of whom resemble one another in their common attributes, but each of whom in his character possesses some shade of difference to endear him to your heart.

* * * *

New Method for Measuring Strains in Concrete Structures

Some time ago the Bureau of Standards, Department of Commerce, brought out what is known as an "electric telemeter" for measuring changes in the length of structural members produced by variations in the load upon the structure. The operation of the telemeter depends upon the variations in resistance to the passage of an electric current of a stack of carbon disks. This is the same principle as that employed in the microphone in the transmitter (the part we talk into) of the telephone. There is, therefore, nothing new in the principle employed, but the Bureau was the first to apply this principle to a precision measuring instrument.

Recently a new use has been found for this device in the measurement of the strains in mass concrete. For this purpose a special cartridge has been designed which houses the stack of carbon disks, and which is embedded in the concrete at the point where the measurement is to be made. Wire leads extend to the surface and are carried to some convenient point where the indicating instruments are placed. These instruments are calibrated to show any deformation in the concrete due to loading.

The instrument will shortly be used in an investigation which is to be carried out by a special committee sponsored by the Engineering Foundation on a dam to be erected at Fresno, California.

Prosperity and Ample Capital to Finance Buildings, Says Straus

AMPLE capital to finance all necessary buildings, was the message brought home to his listeners at the annual convention of the National Association of Real Estate Boards in Detroit, by Mr. S. W. Straus, head of the S. W. Straus Company, New York, Chicago and San Francisco.

Speaking of financing modern buildings of the larger type he said there has been some change in banking attitude. "Appraisal is a matter of judgment, but the real worth of a property must be based on its present income or the income possibilities of the immediate future," he said. "Financing new buildings through the first mortgage real estate bond is simply the application of the principles of commercial banking. Naturally big capital can borrow more proportionately than small capital and the smaller home owner must have a larger percentage of margin in the property than the owner of the skyscraper. As we have progressed to the larger amounts with their larger incomes—larger opportunities for turnover—the margins have grown less, although with the same or even greater degree of safety for the lender.

"While income is the chief factor in determining value in improved real estate, it is just as essential that the income be applied to the liquidation of the debt. As any banker will tell you, a commercial loan would be unsound if the only way in which it could be repaid was for the borrower to liquidate his business.

"Much of the success of the first mortgage real estate bond has been due to the application of these principles of amortization. Manifestly a debt that is being continually paid off by periodical fixed payments made from earnings means a constant increase in the soundness of the loan, and this has an unconscious effect on the owner of the property in the encouragement of thrift and business efficiency.

"When a banker lends money to a man he encourages him morally by expressing faith in his undertaking. This means among other things that the banker must know exactly what materials are going into new buildings on which he advances money, what are the construction plans, specifications for heating, wiring, and every other feature covering every item of construction. As soon as the building begins to deteriorate because the material used in its construction was not up to the proper standards it starts on the downward grade of falling rents. The competition of better buildings in the neighborhood gradually forces down its income to a point where in time it may cease to be a profitable investment.

"Let me emphasize that in all the points of good or bad banking the interests of the borrower and the lender are identical. A loan that is bad for one is bad for the other. A loan that is good for one is good for the other."

The speaker then pointed out that on account of the advancing standards of living in the United States buildings rapidly become obsolete and all cities are face to face with the task of almost complete rebuilding. This means that $6,000,000,000 will be spent in buildings in the United States this year, and there is every reason to believe building operations of similar magnitude will continue for some time. There will be ample capital for these tremendous tasks, the speaker declared, inasmuch as the first mortgage real estate bond brings practically a limitless amount of money into real estate improvement through the erection of buildings of the larger types.

SIMPLICITY AND CLEANLINESS ARE CHARACTERISTIC OF THIS TYPE OF RESIDENCE WINDOW

Steel Windows for the Home

By R. D. HUGHES, Detroit Steel Products Co.

A PRODUCT of antiquity, fashioned first by hand out of wrought iron hundreds of years ago, and used only in feudal castles and ecclesiastical structures, the steel casement has come down through the ages with all of the historical background and tradition of a true aristocrat.

After an unfortunate lapse in usage and popularity, due to the impossibility of securing adequate weather protection, with crude hand made sections, the steel casement has returned again to the center of the architectural stage. In weathering, as well as in ease of operation, freedom from warping and sticking, ease of cleaning, etc., it is now a highly perfected product.

In England, there is one manufacturer alone with an output of more than 350,000 units a year, or enough for 8800 average size homes; and

HARMONIOUS WINDOW DESIGN IN A GLENDALE, CALIFORNIA, HOME

it is only a question of time, and less time than most of us think, when production in this country will far exceed that. It is estimated that in the United States, there is an annual market for 12,000,000 windows, the majority of which, in view of the many inherent advantages of steel, and the diminishing supply of acceptable timber, will some day be made of steel.

This assertion, to the average reader, may sound a bit presumptuous, but to those who have used steel windows and know what they are, it is far less so than similar assertions which could have been made only a short while ago, regarding those other products which are now universally accepted as standard building materials, such as steel beams,

CHARM AND BEAUTY EFFECTED BY STEEL CASEMENTS IN THE HOME

steel columns, steel lath, steel coal chutes, steel treads, steel reinforcing bars, and steel basement windows. Steel is one of the most useful and economical of all building materials, and its application in window construction is but the natural result of its highly satisfactory service in other parts of the house.

So much for the suitability of the material itself. Now let us consider the design of the window and its application to present day residential construction, also its relative advantages as compared to the orthodox double-hung wood window.

The first and main difference between a steel casement and a double hung wood window is that the casement is more serviceable and per-

manent—less susceptible to weather conditions and more easily maintained in smooth working order. Wood windows, as we all know, shrink and swell, according to atmospheric conditions, and no amount of care in making or fitting them will help matters much.

Steel windows, on the other hand, are immune from such influences. Being made of rolled steel sections, riveted and welded at the corners, they provide maximum rigidity, weather protection and ease of operation under all atmospheric conditions.

The second important advantage of steel casements, is that they add distinction and individuality to the home. To some, perhaps, this feature may seem of little consequence, but to those architects, builders and home owners who strive for perfection of detail as well as structural excellence, it is an item of much importance. Despite the fact that they cost very little more, if any, than good wood windows of the double hung type, they impart a feeling of quality, refinement and good taste,

BECKWITH APARTMENTS, OAKLAND, CALIFORNIA
Equipped with Fenestra Steel Casements

such as would only be expected in the finest and most expensive homes. Countless investment builders are using them as feature equipment, to enhance the appeal of their properties and accelerate their sales.

Ventilation is provided in a generous measure, and is easily controlled by means of an adjustable stay-bar. Where there are two swing leaves, hinged at opposite sides of the opening, either one may be set to take advantage of whatever air there is stirring and direct it into the room. When the breeze is from the left, the right-hand leaf catches it, and visa versa. Should the wind be head-on, both leaves may be opened wide, thus providing one hundred per cent ventilation, or fifty per cent more than is possible with a double-hung wood window, only one-half of which can be opened at one time.

Weathering difficulties, which gave so much trouble to the earlier makers of steel casement windows, have finally been overcome through the attainment of greater uniformity in the rolling of the sections, greater care in assembly and fitting, and last but not least, the use of heavier and better hardware. The bars or sections from which the windows are made, are being rolled more accurately and smoothly than

ever before and the frames and swing-leaves individually fitted to insure close contact without binding. The hinges have been made heavier, with provision for adjustment and the locking handle has been made more positive in action, pulling the swing-leaf up to the frame tightly at all points.

From the installation standpoint, steel casements may be handled quickly and economically by any competent contractor. They may be set in prepared openings, i.e., openings, left in the finished walls, or they may be built in as the wall advances. In either case a wood strip is screwed to the outside of the frame, to serve as a guide for the mason; also, later on, as a plaster ground. Before the strip is fastened on, mastic is applied to the outside of the frame, to insure a snug, weather-tight joint.

With the exception of a second wood strip, nailed on later to provide a frame for the screens, this strip is the only wood necessary in

LARCHMONT GABLES APARTMENTS, MAMARONECK, NEW YORK
Sixteen hundred units of steel casements

the installation. Wood trim, of course, can be used all around, as is customary with the conventional type wood window, but it is not consistent with the principle of steel window usage, nor does it add anything to the appearance of the completed job. One of the most pleasing steel casement installations the writer has ever seen included buff colored plaster jambs over corner bead, with a sill of red, unglazed bull-nose tile. Although plain, it possessed a certain simplicity and charm that elicited favorable comment from all those who saw it.

Considering the increasing cost of wood trim, and the trouble and expense of keeping it painted or varnished, it is not at all illogical to predict that the use of it around windows will become less and less prevalent as time goes on. The tendency is already visible in the increased use of plastered archways, and window openings are likely to follow.

Screens and drapes for the steel casement should be handled with the same simplicity as that which governs the treatment of the window opening, and whenever possible, should be decided upon tentatively at least at the time the window openings are laid out by the architect or builder.

UNFINISHED STEEL CASEMENT INSTALLATION, SHOWING SCREEN STOPS IN PLACE

Many annoying and avoidable mistakes are made in the installation of steel casements, simply because the architect neglected to anticipate the arrangement and attachment of screens and drapes. A case comes to mind, in solid masonry construction, where the wood trim had been entirely eliminated, and no provision made for the attachment of the drapery fixtures. Attachment was finally made by inserting wood plugs in the plaster, but not without considerable delay and extra expense, all of which could have been averted if conditions had been studied carefully at the start, and wood blocks built in to receive the drapery bracket screws.

To bring out the maximum beauty and convenience of steel casement windows, the roller shade and curtains, proper, should be eliminated, if possible, leaving only the side drapes, fastened on traverse rings at the top and manipulated with draw cords. On wide openings, a valance may be added if desired, but on narrow openings, it is usually omitted.

In screening wide openings, it is customary to use horizontally sliding screens, divided vertically in the middle, and on narrow openings, vertically sliding ones, divided horizontally. Swing screens, hinged at the jambs, may be used if care is taken to see that they do not interfere with the drapes when opened. This is usually done by the use of units having a row of fixed transom lights at the top, the screens being brought only to the transom.

A final feature, of special interest to the housewife, is a newly developed extension hinge, which permits easy cleaning of the entire outside surface of the window, from the inside of the room.

Heavy Timber Mill Construction

ARCHITECTURAL designers and draftsmen will greatly appreciate a recent important contribution to technical information issued by the National Lumber Manufacturers Association, Washington, D. C., under the title, "Details of Heavy Timber Mill Construction." This bulletin, which is just off the press, illustrates good practice in heavy timber mill construction detailing and furnishes a distinct service not elsewhere available in compact and simple form. It will be mailed free upon request. Occasional searches which designers and draftsmen make for such details are likely to fail to reveal the kind of material desired. Lost time is bound to result, poor proportions and relationships of hastily improvised details are sure to be noticeable in the finished production, and features which are actually essential in this type of construction are often omitted.

From the preface of the bulletin it is indicated that heavy timber detailing has become a specialty. Those who specialize in mill construction have sets of details designed especially to meet their needs. Those who only occasionally are called upon to design buildings of this class usually improvise details as the need develops. This bulletin is intended primarily for this latter class, though its use by specialists as well would help standardize procedure. Its use in the drafting room should save the time of draftsmen and designers and help toward a more widespread knowledge of good practice in timber detailing. Proper detailing is the essential feature of most types of construction. The general design may be sound in every respect but unless the connections are properly proportioned and secured, lack of stability and sometimes actual failure occur.

These details are based upon a careful field examination of recently erected buildings built in conformance with well established design principles. As originally practiced in the textile mills in New England, standard mill construction is no longer suitable for the congested areas of our modern industrial cities. Close column spacing though not objectionable in textile mills, seriously handicaps some other forms of industrial enterprise.

In order to meet the demand for large areas of floor space unobstructed by columns, two types of construction are used: the so-called semi-mill construction, and laminated mill construction. Neither of these types comply with standard mill construction in every detail. The details shown in this bulletin, therefore, cover all three of these distinct forms of heavy timber mill construction. If kept available for quick reference in the drafting room, a great deal of time may be saved and aggravating uncertainty eliminated.

* * * *

Architects Given Spanish Dinner

Architect G. Albert Lansburgh of San Francisco, was the guest of honor at a Spanish dinner given to the members of Southern California Chapter, A. I. A., at Villa Vista Rancho, near Glendora, August 11. The firm of Morgan, Walls & Clements acted as host, Mr. Stiles O. Clements being master of ceremonies.

Lessons of the Santa Barbara Earthquake

SOME real constructive information is coming out of the Santa Barbara earthquake, not the least important of which is the suggestion that every city and town of any considerable size in California should have building laws that make mandatory certain building regulations, with the factor of safety a paramount requisite. Such regulations would materially benefit the architect who, heretofore, has found it necessary to cheapen the design and materials in a building because owners demanded more for their money than high class construction would permit.

What is needed now in Santa Barbara and will be needed for a considerable period, is a competent advisory board composed of architects, engineers and town planners. While engineers will at the outset be required to superintend the big operations incident to construction, it will require the highly trained services of architects and the equally skillful efforts of the best town planners to realize the fond hope of Santa Barbara dreamers for an ideal city.

Of the many reports by engineers and others on the damaged buildings in the Southern city, none is more intelligently and sanely presented than that prepared by Messrs. H. J. Brunnier, John G. Little and T. Ronneberg, San Francisco engineers, who were asked to investigate conditions in Santa Barbara for the Research Department of the California Common Brick Manufacturers' Association and Allied Interests. The engineers sum up their findings in the following three paragraphs which might well be memorized by our builders of cities lest they forget again:

"The destroyed buildings are an indictment against poor structural design, inferior materials and careless workmanship. This is so self-evident even to a layman that it needs no theoretical arguments because it is plainly and practically demonstrated by the fact that in the midst of the ruins there remain standing intact as a monument to skill and integrity, structural steel framing, reinforced concrete construction, brick buildings, terra cotta wall construction, and wood frame buildings.

"In every building damaged in the earthquake at Santa Barbara, the damage is due not to the kind of material used nor the type of construction attempted but to poor workmanship, inferior quality of materials, improper design or a combination of the three.

"For a number of years after the destruction of San Francisco in 1906, the phrase 'Lest we forget' was the universal slogan and warning. But as time rolled on, the people have forgotten and through ignorance or selfishness, poor construction is creeping in. Let us revive the phrase 'Lest we forget' and insist that all buildings be properly designed and carefully inspected and constructed with good materials, honest and careful workmanship."

* * * *

Color Decoration

If you plan to build your house of stucco, brick, or stone, do not overlook the opportunities for exterior color decoration that these surfaces present for mosaic, fresco painting, and tile. In the attempt to make houses dignified, there is often a tendency toward sombreness. Bright colors on the outside of houses add gayety and beauty. Architectural polychromy was commonly practised by all the ancient peoples. It reached a very distinguished character among the Greeks and was one of the most prized features of mediaeval design.—House Beautiful.

Color Is Making Permanent Stucco Houses Individualistic

By FREDERICK JENNINGS

AMONG the many things which go to make a house individualistic is color. Home builders and architects have long realized this fact, as has been demonstrated by our continued use of color on frame houses. We painted to preserve the exterior of our houses, but we also used color because of the distinction and air of difference such painting gave our homes.

It is only natural, then, that color in stucco houses should be an inborn development. We can test this desire for color by noting the indifference with which most of us view the monotonously gray stucco house common to building a few years back.

In the stucco house, the entire exterior surface is susceptible to color treatment. The relation of the color of the wall to the color of the roof, to the setting of the house, are all of great importance. Through this use of color we give our homes an air of belonging to its site, give it an expression of our own personality, accentuate the architectural beauty of the structure.

But, unlike houses of other materials, use of color does not exhaust the possibilities of treatment in the stucco house. Combined with this wide range of color is textural treatment. By the use of the steel trowel, the wood float, the carpet or burlap covered block, even the hands, an almost limitless variety of surface textures are possible.

Walls can be given lights and shadows, reliefs and tones through a manipulation of the stucco coat. There are delicate, concise textures for the small cottage or bungalow and there are also bold, sweeping textures for the large or rambling home. These various textures can be intimately incorporated with the architectural style of the house.

Today we are not surprised to see stucco houses of pink, buff, green, red, black, even blue and all the intermediate shades and colors. Whole districts of stucco houses, containing almost every conceivable color for houses, have sprung up over the country. And without exception there is no color of note to mar the beauty of the whole.

Yet even here the possibilities of stucco color and texture have not been exhausted for these colors, these textures, these lights and shadows are permanent. There is no need for annual freshing, no cause for worry because of fading colors, no expensive maintenance, for with Portland cement stucco these features are as permanent as the concrete dams, bridges and buildings which dot the country.

New conceptions of home beauty have come into being with this growing use of colored stucco. Color and texture in stucco have brought into favor architectural styles long considered impossible of transposition. This movement toward more diversified architecture has brought forth English, French, Spanish, Italian and many other old world styles of home architecture, and not only for large and pretentious homes, but for the smaller cottage and bungalow these styles are now being adopted. The result has been an increased beauty, more livableness, greater firesafety and more permanent homes.

* * * *

Merger of Plumbing Fixture Concerns

The West Coast Porcelain Manufacturers of Milbrae have merged with the Washington Iron Works of Los Angeles, according to an announcement by Mr. G. B. Schneider, general manager of the Southern California company.

Why Wire for an Electric Range?

By M. W. SCANLON,
Westinghouse Electric & Manufacturing Company

WIRING for an electric range requires, in place of the usual wiring for a lighting load, a heavier service connection, heavier switches and fuses, and heavier interior wiring on the range branch circuit. The most usual method is to use the 220-110 volt three wire service. On such service an eight kilo-watt range, average family size, should be fed through wires of at least number six size, B & S gauge.

The cost of material for the main service and range circuit is likely to be twenty-five to thirty dollars, while installation costs in a house already complete will be close to seventy-five dollars including material. If the loss of switch and duplication of labor is considered—items which represent real losses when range wiring replaces an original lighting lay-out—the total cost is much higher. If the range circuit is installed while a house is building, the cost of installation need not be more than thirty to forty dollars more than the ordinary lighting circuit. Hence reason No. 1: It is cheaper to install range wiring during construction than at any later time.

The younger women who are moving into these new houses and apartments have a new idea of home responsibility as opposed to home comfort and working convenience. If someone will provide a wood, coal, or gas range that can be wound up at night and depended on to wake the family, boil the breakfast food, fry the bacon and eggs, start the coffee, and heat the water for warming baby's milk while the family dresses, alright. But up to the present time the only fuel which can be given the morning's instructions the night before is electricity.

To be more specific: There are a very large number of electric ranges on the market. A large number of these are so-called semi-automatic, having a thermostat control device which allows the oven temperature to reach a certain maximum and no more. Certain gas ranges now also have a corresponding device and the old wood burner had a damper for the same purpose.

A smaller group of electric ranges are full-automatic, having a time starting feature. The oldest full automatic scheme is merely an alarm clock with a lug on the alarm winding key which strikes the handle of a starting switch at the time for which the alarm was set. This device was a feature of the old Copeman range built ten or twelve years ago, the patents for which were bought by the Westinghouse Electric & Manufacturing Company and are still the basis of their automatic range design.

The clock device merely turns on the current which is further controlled by the thermostat working in conjunction with a circuit breaking device. Circuit-closing at a predetermined time and circuit-opening at a predetermined temperature would seem to give us the ultimate in range control. But when automatic electric ranges were first marketed, power rates were far higher and it was necessary that comparative economy in operation be assured to the customer if there was to be a customer. This led to the development of the thick insulated wall oven and the boiler oven, a small auxiliary oven in which boiling could be carried on with a minimum use of power.

As a result, electric range operation today in most of the settled districts of the West is practically on a cost parity with other fuels.

All electric ranges do not have thick oven walls nor auxiliary boiler ovens, but where such a range is in use and an appropriate amount of judgment is applied in using power only at times and in amounts needed, the user need have no cold chills when the power bill comes.

The auxliary boiler oven feature, though almost as old as electric cooking itself, is unique enough to deserve a little more explanation. This boiler oven is designed to be used with a standard "clover-leaf" set, a nest of three triangular utensils which, set together, just cover an eight or nine inch circle. Space is also allowed in the boiler oven for a flat round cooker pot to be placed on top of the clover-leaf set. Thus, four separate utensils containing four separate vegetables or other boiling dishes, can be boiled at the same time on a burner the whole of which would ordinarily be used for one utensil in open cooking. Furthermore, practically enough heat is saved by the thick oven walls to take care of the additional quantity of cooking to be done. So the boiler oven gives practically four times the efficiency of the open boiling method.

It has been necessary for manufacturers of full-automatic ranges to combat some of the old rule-of-thumb cooking ideas. For instance, the flavors of onions, cauliflower, and other vegetables do not mix when they are all boiled at once in the clover-leaf set in the boiler oven as one might suppose. And bacon and eggs or other meats may be put into a cold oven hours before the current is to be automatically turned on for their cooking. Successful experience soon satisfies the cook who tries such things on the electric range.

Aside from the convenience of time and temperature controls and the economies of boiler ovens and thick wall insulation, there are other benefits for the electrical cook. She may keep cut flowers on the range while the oven is roasting hot—without wilting them. Her kitchen never becomes over heated when baking is going on. A frozen pudding packed in ice may be put into a cold oven and the oven thus used as a refrigerator. There are no fumes, smoke, soot, matches, ashes, or danger of fire to contend with or fear.

For the man designing a home or apartment, there are some very important factors to study when the electric range question comes up. With all ranges using combustible fuel, a flue is a necessity. This means expensive construction, fixed location of range, loss of floor space in kitchen or in some adjacent room, or complicated planning in order to get the range into the most satisfactory place and still have it near the chimney.

The electric range requires no chimney for instead of the heat of combustion it uses the heat of electrical resistance. Its oven walls retain the heat even at high temperature in the better ranges so such ranges may be placed next to the refrigerator if necessary, in arranging a kitchen. Such elasticity in kitchen planning gives the architect a real chance to satisfy his future tenants better than has been possible without electricity.

How rentable or salable is the house or apartment today that is not wired for electric lights? Approximately 98% of the homes in California under power lines are wired for electric lights today. But ten or fifteen years ago such wiring was not a requisite to salability. Houses built now and wired for range and heater service will still be modern homes ten years from now. Houses not so wired by that time will be dropping rapidly into the discard, losing more for their owners in three months than the added cost of the range installation would amount to now.

In conclusion let us summarize the reasons for installing range wiring in all new homes and apartments:

1. This operation costs less during construction than later.
2. The convenience of automatic control of range cooking is much desired by present day women.
3. Electric cooking can now be done as cheaply as cooking with other fuel.
4. Surplus heat, fumes, smoke, soot, ashes, matches and fire hazard are diminished or eliminated.
5. Efficient and attractive kitchen design is made easier.
6. Future property value will be maintained for a longer period.
7. Both natural and artificial forces combine to impell the use of the electric range. The human desire for newer and better conveniences is the natural force; while the educational selling efforts of the electrical industry constitute the artificial forces referred to.

* * * *

Wall Construction

A FIFTY-SEVEN page report on Recommended Minimum Requirements for Masonry Wall Construction has recently been issued by the Department of Commerce. The report was prepared by a committee of architects and engineers organized by Secretary Hoover in 1921 to draft recommended uniform building laws for adoption by cities and states throughout the country. It consists of three parts.

The report presents a set of building code requirements for the regulation of masonry wall construction recommended for adoption or adaptation by those writing or revising building codes. These sections cover the quality of materials, maximum stresses for which masonry should be designed, matter of workmanship and the height and thickness of unstayed masonry walls both bearing and non-bearing. In general, the committee's investigations disclose that thinner walls than those usually required in building codes are safe except under abnormal conditions of loading, wind pressure or seismic disturbances.

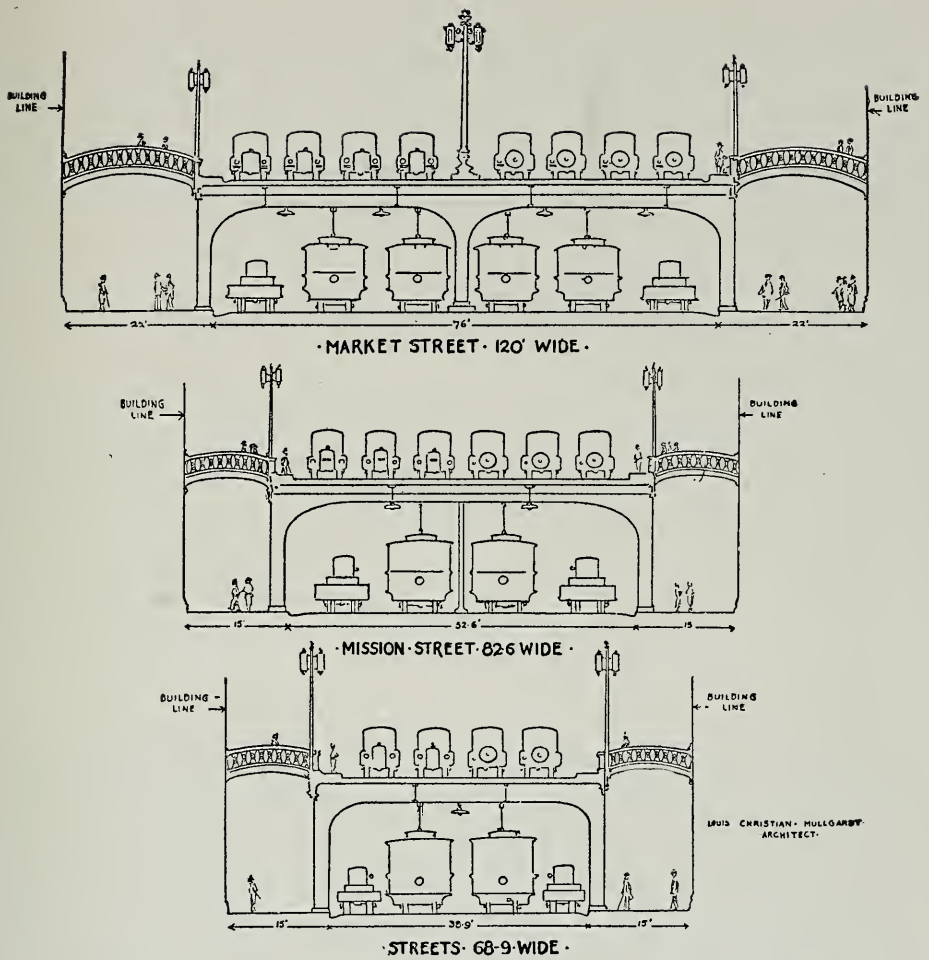
Extensive tests of the fire resistance and crushing strength of various masonry materials and combinations were made at the Bureau of Standards and other places as a preliminary to the committee's report on this subject. Summaries of these investigations and much other valuable information on masonry wall construction not otherwise obtainable in concise form is given in Part III of the Report. This part also is intended as an explanation of the core requirements advocated in Part II with the thought that their adaptation by code revision committees and their administration by building officials will thus be considerably facilitated.

Previous reports of the committee have received wide circulation and have been utilized in many cities and states. It is expected that the Report will be welcomed by architects, engineers and builders. Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 15 cents per copy, currency or money order.

* * * *

San Francisco Architect in Fatal Accident

Architect Gustave Stahlberg, 544 Market street, San Francisco, was killed near Novato, Sonoma County, August 2nd. The automobile in which he was riding with two companions turned over and Stahlberg was pinned beneath the car.



CROSS SECTION SHOWING NEW TRAFFIC PLAN FOR MARKET STREET, SAN FRANCISCO

Architect Has Plan to Relieve Traffic Congestion

ARCHITECT Louis C. Mullgardt has a new plan to relieve the traffic congestion on Market street from the Embarcadero to near the Twin Peaks Tunnel entrance in San Francisco. Mr. Mullgardt's proposition calls for the continuation of the four tracks for street cars, using one pair for high speed interurban traffic to make only station stops. Mr. Mullgardt does not approve of the elevated road plan which he considers obsolete, noisy and utterly without merit. He is also opposed to subways, the cost of which, he declares, would be from four to five times of that of the elevated road. The basis of Mr. Mullgardt's plan is the construction of an overhead automobile thoroughfare on Market street, leaving the street proper free for car service. By using the municipal tracks through Twin Peaks Tunnel and to Ingleside, and connecting with the Market street line at Colma over a new line, a direct route for high speed interurban street car traffic would be provided.

Plans Taking Shape for Philadelphia Exposition

THE building plans for the Sesquicentennial International Exposition, to be held in Philadelphia in 1926 in celebration of the 150th anniversary of American Independence, show a comprehensive exposition plant, to be built expeditiously and with attention to ornate detail and minimum of cost. The plans are rapidly nearing completion in the office of the exposition architect, which is located in the historic old Philadelphia City Hall, adjoining Independence Hall. John Molitor, city architect of Philadelphia, is architect for the exposition.

The contract drawings and the specifications for the Administration building have been completed and the style of the building will be Colonial.

The exposition site at League Island embraces 700 acres, part improved as a city park and recreation center and part partially improved. The improved section embraces League Island Park, a municipal park development on which the city has expended a million dollars or so and has thus so enhanced its natural attributes as to make it an ideal public recreation center. It has been treated according to the most modern landscape development ideas, to which its natural advantages have lent themselves so well that it is now a high grade city park, complying with every accepted ideal of city planning. Lagoons dot its acreage and adapt themselves most admirably to the exposition development, as also do a number of ornate though ultilitarian buildings erected on the site in the park development scheme.

The present development of the park was made by Olmstead Brothers, of Boston, who have just been appointed to do the landscape development for the Sesquicentennial exposition site. The price to be paid them will be about $10,000. This concern also laid out the exposition grounds of the Panama-California Exposition, at San Diego, California, in 1915, of which exposition Colonel D. C. Collier, now director-general of the Sesquicentennial exposition, was director-general.

Large exhibition palaces, each containing 9 acres of exhibit space on one floor, will line either side of Broad street where it passes through the exposition grounds, down to the entrance of the Philadelphia Navy Yard, the southern boundary of the exposition plot. Broad street will be the main esplanade in the exposition grounds.

The part of League Island Park to the west of Broad street which is in an improved park condition, is below Pattison avenue, 3600 south. This will be devotedly mainly to state and foreign buildings.

The partially improved section to the west of Broad street, or main esplanade above Pattision avenue, and below Oregon avenue, will be mainly occupied by the Gladway, the amusement section and other recreational and similar features.

The civic stadium, now well under way, forms the principal structure in the lower eastern part of the exposition site, just east of the main esplanade, between Pattision avenue and Kendrick boulevard, the latter a handsome highway giving egress from the city via Delaware avenue and the elevated boulevard planned for that thoroughfare.

The main entrance to the exposition will be on the northerly side of the Plaza where Broad street crosses Oregon avenue. At this point memorial pylons will flank an imposing gateway which will welcome all to the exposition.

The Lighting of Picture Galleries and Museums

AT a meeting of San Francisco Chapter, American Institute of Architects, held July 16th, Mr. S. Hurst Slager, F. R. I. B. A., delivered an illustrated lecture on "The Lighting of Picture Galleries and Museums," a subject which the author has given exhaustive study and thought. Nothing short of a course of lectures would adequately cover all branches of this important subject but the speaker nevertheless was able to give his listeners a great deal of valuable information in the one talk. "The excellence of any work of art," he said, "consists in the complete accomplishment of its purpose."

In his lecture Mr. Slager undertook to illustrate and describe only a line of thought which would include contrast scenes in types of double and single glazed galleries; experiments to show the relative amount of light and its diffusion; proofs that the Top-Side Light Method, in its various forms of application, is the only one which can give proper illumination; illustrations showing that this method can, without any structural alterations, be at once applied to side-lighted rooms and to top-lighted galleries in turn by the adjustment of opaque blinds; expedients which may be used where this system of adjustment is inapplicable and the structural alterations necessary for the permanent conversion of top-lighted galleries into Top-Side Lighted ones as is suggested for the New Zealand Court of the Wembley Exhibition.

CORRIDORS AND MAIN FLOOR OFFICES OF NEW P. G. & E. BUILDING, SAN FRANCISCO, ARE LAID WITH BONDED FLOORS COLONIAL BUFF TREADLITE TILE

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ARCHITECTURE, in short, does express the life, the education, and the culture of the people as a whole. Buildings will be built substantially, durably, and beautifully, if the people wish, and just to the degree they wish. —D. Everett Waid, President American Institute of Architects.

GARDENS FOR PUBLIC DINING

Dining nooks for the gardens of private homes have been discussed in our July issue. The climate of the West is favorable for such healthful partaking of food, supplemented by the beauty of nature which quickens the mind and the spirit. Now let us consider the advantages of public dining under the open sky in our western American cities and towns.

Many hotels, office and studio buildings are designed with courts or L shaped enclosures which insure protection from winds and too much hot sun. When the orientation of these buildings is such that interesting or fine views are commanded, they provide ideal sites for public dining rooms. Some buildings have roof space adapted to cafes, and when suitable windbreaks of glass and plantings in boxes are provided, they will offer sweeping views and furnish exhilaration and zest to the diners. The use of tile in floors and walls of fountains, of colorful terra cotta in urns, vases and flower boxes and the judicious employment of bronze or wrought iron will serve to set off to the best advantage the distant hills, mountains, water and the sky. The rich and cheerful color of tree, shrub and flower or fern plantings together with the movement or repose of water in fountains and pools will complete the picture, refreshing for all.

When the public outdoor dining room is situated in the heart of a city, the major problems will often be solved by the architect, altho the landscape architect can well contribute to the solution of the problems by advice or direct participation in the design as well as in the selection of plant materials, tile, fountains, urns and garden furniture. But the further one goes from the center of a city to establish an open-air cafe, the responsibilities of the landscape architect increase until if the site chosen be in a grove, beside a lake or on a summit, virtually the whole problem of making the place practical, comfortable, attractive and charming will rest with the landscape artist.

So great is the devotion of westerners to the out-of-doors that this movement for public dining in the open is sure to grow with the growth of an understanding of its practicability and potential joys. Americans are traveling more and more and they are becoming frankly observant of the good qualities and customs of Europeans, which might be adapted to our own uses and needs and which also might greatly increase our common hap-

piness. Any one remembering the delightful spots in Italy, Switzerland, Germany and France, where the people dine under the trees with nature friendly and intimate, and while leisurely enjoying an inspiring view of an historic city or village, a glorious bay or harbor and of distant hills or mountains knows the intense pleasure and zest attending the partaking of meals in such lovely and stimulating environment. Appetite and spirits are both simultaneously improved and friendliness and charitableness are brought to their true, lofty plane. By a natural process, dining in the open then contributes to make life approach a fine art.

The art of conversation and conversation on art and nature reach their highest development in the open, even as music and the drama achieve the highest forms of expression under the sky. A union is effected between man and nature, between the nature of man and the ideals toward which he aspires. Close to trees and all growing plant life, man takes on the rhythm of nature and as she offers him the keys for his moods, he follows motif after motif, in accord with her impulses. With such harmonious trend, life completes itself and unity is felt, breathed, with most abiding satisfaction.

Emerson Knight,
Landscape Architect.

LEGAL REDRESS FOR COPYING PLANS

The following letter addressed to Building Age, undoubtedly expresses the experience of many California architects and designers.

"I recently secured a copyright on the plans and elevations of a two-family flat building, with individual entrance for each occupant, which has an original and novel exterior design, and an original floor plan," writes an architect.

"About three months ago I constructed and sold three buildings, in which the plans mentioned were used; and the novelty and originality above referred to enabled me to sell these buildings practically before they were completed.

"A real estate concern here, seeing the advantages of these buildings and their quick salability, used the services of a so-called architect, or, more properly speaking, a carpenter-foreman, to trespass on our property while the buildings were under construction. He took off the measurements of the entire building, and from these measurements made up his own plans, which the real estate dealer intends using for the construction of 12 similar buildings. The plans are fully 99% the same as ours. Permits for the buildings have been taken out, showing the real estate dealer to be the owner, and the above mentioned person to be the architect-builder. Excavation has been started. Rather than sue to enjoin the construction, we prefer to wait until the work is completed and then sue for damages. What do you advise? I, also, have applied for patent covering the form of building referred to."

Since an opinion in this matter must necessarily be somewhat offhand, because hastily prepared and because based on a brief statement of the essential facts, reliance should be mainly placed on advice of some local counsel specializing in patent practice, etc.

However, we do not believe that there can be any doubt that the copyright referred to confers no protection against what has been done in this case. When this correspondent devised and prepared original and novel plans, etc., and copyrighted them, he acquired the right to prevent any one else from copying the plans as delineated on paper. But we do not believe that the copyright protects against preparing plans from independent measurements taken in a building constructed under copyrighted plans.

Enough facts are not presented to justify an opinion whether any patentable invention exists in the elevation or floor plan. Certainly, such invention does not exist in the mere fact of novelty or originality. There must be utility as well. For example, patents have been allowed and judicially sustained for inventions covering forms of concrete construction, where a new method has made it possible to more quickly or securely build. So, if it were possible to build a floor that could

be lowered or elevated to adapt a room to different uses, patentable invention would be disclosed. Or, if one were to invent a wall which could be folded up in a way not already known to the building industry, that would be patentable, because useful, as well as novel and original.

But the facts presented tend to show a possibly valid claim on the ground of invasion of an unpublished property right, within the principles dealt with by the court in the case of Gendell vs. Orr, 13 Philadelphia Reports, 191, says a writer in Building Age. Plaintiff sued to enjoin copying of a novel portico designed by him and constructed on a house owned by him. The injunction seems to have been denied solely on the ground that when he constructed the portico, exposing it to the public gaze, he thereby lost his property right in the design, so far as preventing any member of the public from utilizing the benefit of ideas gleaned through inspection from the street. But the court said:

> The plaintiff undoubtedly, by natural justice, had a right of property in his design or invention, because of the labor bestowed, and **that right exists as long as he maintains it unpublished for his private use or pleasure.**

COLOR IN ARCHITECTURE

"Americans are continually criticised for their failure to respond to the artistic or beautiful," said Miss Hazel Adler, notable specialist and authority on color in her address before an audience of architects recently.

Miss Adler said in part: "American temperament is supposed to be dominated by materialism and commercialism. How far the environments in which the great majority of Americans live, have influenced their colorless temperaments, may be judged when one pictures in the mind's eye the external atmosphere of a typical American city or town which. to even a tolerant observer, is drab, colorless and uninteresting. American 'Main Streets' are the cradles of American temperament.

"In every phase of modern life color now makes its appeal. Our books, periodicals and advertising are all colorful. Our clothing, our vehicles, the theatre and our shop windows outdo one another in presenting to the mind a color picture. As life becomes more colorful in all its aspects, so the visible expression of that life—architecture —must become increasingly colorful and architecture today is at the threshold of a color renaissance.

"The possibilities of architectural color expression offered by reinforced concrete represents the simplest and more responsive avenue of approach. The colors suitable for the body of concrete structures are only limited by the artistic conception of the architect.

"The selection of the color for the concrete depends on the architectural type of the house, its surroundings and the roof and trim color scheme which is to be used with it. Warm cream and fawn are always a dependable selection. With the cream, several excellent color schemes readily present themselves—

"A brown roof can be used with green trim; a green roof with brown trim; or a red roof with white trim.

"Lichen green, terra cotta red, stone pink, sage - green, venetian orange, all offer interesting and practical possibilities for stucco houses. Each color of course demands artistic discernment in the selection of the other colors to be used with it.

"The coloring of the walls becomes the problem of the architect and builder as well as the decorator. A wide and delightful range of colors can be applied to interior concrete walls as well as a wide range of interesting textures."

With the Architects

Building Reports and Personal Mention

New Partnership

Messrs. Shields, Fisher and Lake, architects and engineers, announce a change in the firm name to that of Fisher, Lake and Traver, with offices in the Pacific Southwest building, Fresno, and the Edwards and Wildey building, Los Angeles. Mr. Traver, who was for ten years a member of the architectural firm of Coates and Traver, Fresno, will devote part of his time in the future to both the Fresno and Los Angeles offices. The new firm has considerable work under way including the Stillwell Apartments at Long Beach, to cost $750,000; an eight-story garage at 6th and Carondelet streets, Los Angeles, to cost $310,000; the Wilson theatre in Fresno; and the new syrup plant for the Sun Maid Raisin Growers at Fresno, consisting of four buildings.

Designers in Demand

Appropriations by the California State Legislature provide for new buildings in many of the institutions of the state, and to procure designs for these buildings the services of architectural draftsmen are needed by the Division of Architecture of the Department of Public Works. The position pays from $285 to $350 per month, and is filled by appointment from a list secured by the State Civil Service Commission at Sacramento. Further information, together with application blanks, may be had from the Commission offices at Sacramento, or 116 State building, San Francisco, and 1007 Hall of Records building, Los Angeles. The examination will be held in San Francisco.

Open to Architects of World

The Egyptian government has instituted a competition open to architects of any nationality, for the reconstruction of the Mosque of Amrou in Cairo as it was in the days of its greatest splendor.

Prizes will be awarded of $12,500, $5,000 and $2,500 respectively, for the best three plans submitted to the Egyptian Minister of Religion by January 1, 1927, accompanied by a treatise on the subject.

The Mosque was built in the year 653 by Amrou, the Arab conquerer of Egypt, and was at its highest splendor between the tenth and fourteenth centuries.

Berkeley Residence

Preliminary sketches have been made by Architect W. H. Ratcliff, Jr., for a $15,000 home in North Berkeley, for Mr. F. A. Naylor, Jr., of the Mercantile Trust Bank, Berkeley.

Community Apartments

Architects Weeks and Day, 315 Montgomery street, San Francisco, have been commissioned to prepare plans for a 15-story Class A community apartment house, to be erected on the site of the Towne Estate at California and Taylor streets, San Francisco, at an estimated cost of $1,500,000. Mr. E. B. De Golia is interested in the promotion of a corporation which will finance the project.

The same architects are preparing working drawings for a six-story Class B reinforced concrete store and hotel building in San Jose for the St. Claire Realty Company. The structure will have 250 rooms, large dining room, lobby and stores and will represent an expenditure of $1,000,000.

Colonial Country Club House

Architects Willis Polk and Company, 277 Pine street, San Francisco, are completing drawings for a three-story Colonial Club house at Baden Crossing for the California Golf Club, Ingleside. The improvements will cost $125,000.

The same architects have completed plans and have taken bids for a large country home at Hillsborough. Plans are being prepared for a two-story reinforced concrete addition to a large garage on Van Ness avenue, San Francisco.

Los Angeles Church

Plans have been completed by Architect B. G. McDougall of San Francisco and contract has been let to the Antone Johnson Company for $150,000 to build a reinforced concrete church for St. James Episcopal Parish, Los Angeles.

The same architect has completed plans for a one-story brick veneer store building for the Tucker Investment Company at Alameda. The structure will cost $11,000.

Palo Alto Residences

Plans have recently been completed by Architect Birge M. Clark of Palo Alto, for several modern homes to be erected on the University Campus, Palo Alto; also, for a stucco residence in Palo Alto for Dr. J. H. Kirk and for a reinforced concrete store building on University avenue for Mr. B. W. Crandall.

Masonic Cathedral

A Scottish Rite Cathedral to cost $450,000 is to be built on the southwest corner of 9th street and Elm avenue, Long Beach, from plans which have recently been completed in the offices of Parker O. Wright and Francis H. Gentry, Marine Bank building, Long Beach.

Personal

Mrs. H. C. Wortman, 245 Vista avenue, Portland, is the first woman to be granted an honorary membership in the Portland Chapter A. I. A.

Messrs. Stuart & Wheatley, Seattle, have moved their offices formerly at 426 and 27 Walker building, across the hall to 430 and 431.

The marriage of Architect F. A. Naramore, Central building, Seattle, to Miss Frances Yeomans on July 30 was the culmination of what might be called a real professional romance. Mr. Naramore is the architect for Seattle School District No. 1 and Mrs. Naramore was a supervisor of fine and industrial arts for the same school district with offices in the same building.

Members of Washington Chapter, A. I. A., appointed to A. I. A. committees are: A. H. Albertson, Historic Monuments and Scenery; Charles H. Alden, Structural Service; Louis Baeder, Registration Laws; George Gove, Industrial Mobilization; F. A. Naramore, Practice and School Building Standards; Rudolph Weaver, Community Planning; Andrew Willatsen, Industrial Relations.

A. E. Patterson, for ten years an engineer with the Southern Sierra Power Company, and a graduate of the University of California, has been appointed by the Berkeley city council to supervise the filling of sewer trenches and resurfacing of streets in Berkeley.

Architect Willis C. Lowe, Monadnock building, San Francisco, is now located in the Builders' Exchange, 354 Hobart street, Oakland.

Messrs. Edgar Blair, A. H. Albertson and Harlan Thomas designed the Architectural features of the attractive Montlake bridge, recently dedicated in Seattle.

The firm of Schacht & Bergen, Yeon building, Portland, has been dissolved. Mr. Harold P. Bergen has established offices in the Henry building, while Mr. Martin Schacht will remain in the Yeon building.

Mr. J. D. Galloway, consulting engineer of San Francisco, and Mr. D. C. Henry, consulting engineer of Portland, Ore., have been retained by Los Angeles county supervisors to determine the best location for the proposed flood control dam in San Gabriel canyon.

Messrs. Schack, Young & Myers, Central building, Seattle, are keeping their draughting boards busy with preparation and completion of plans for such buildings as the proposed $700,000 Seattle Civic Auditorium, the $120,000 University Baptist Church, and $40,000 clubhouse for the Washington Golf Club.

Mr. Folger Johnson, of Johnson-Parker-Wallwork, U. S. Bank building, Portland, recently returned from a business trip to Florida.

Architect B. Marcus Priteca has returned to Seattle from San Francisco to assist his associate, Frederick J. Peters, in rushing to completion plans for the $500,000 Jensen & Von Herberg theatre in Seattle.

Architects Lawrence & Holford, Chamber of Commerce building, Portland, in remodeling their reception office, have achieved a result worthy the study of architects contemplating renovation of their own offices.

Architect C. F. Skilling has moved his office from the Bradbury building to 668 Chamber of Commerce building, Los Angeles.

Architect Ross Montgomery announces the removal of his office from 622 Story building to 572 Chamber of Commerce building, Los Angeles.

Sacramento Architect Busy

New work in the office of Architect Leonard F. Starks of Sacramento includes a brick church to cost $110,000 for the Pioneer Memorial Society; a $60,000 church for the Fremont Presbyterian church and for which bids have been received; also, an athletic building to contain hand-ball courts, bowling alleys, golf practice links, etc., for the Sacramento Lodge of Elks. This structure will be 75 feet high and will adjoin the new Elks building now under construction.

Granted Certificates

Six out of ten applicants were granted licenses to practice architecture in the state of Washington following examinations held at the University of Washington last month. The following received certificates: George L. Ekvall with C. F. W. Lundberg, Provident building, Tacoma; Walter W. Lund with Priteca & Peters, Pantages building, Seattle; Albert Miller Allen, Seattle; R. S. Remer, Seattle; Curtis Richardson, Lewiston, Idaho; Jesse N. Warren, Seattle.

Concrete Apartment Houses

Architects Baumann and Jose, 251 Kearny street, San Francisco, completed plans for a five-story reinforced concrete apartment house on Washington street, for Mr. M. Sheftel, cost $85,000; three-story frame and concrete apartment house, Franklin street, for Mr. C. Robletto, cost $50,000, and a three-story frame brick veneer apartment house, Schrader and Fell streets, for Mr. Oyen, cost $60,000.

Architectural Prize Award

The medal of the "Societe des Architectes Diplomes par le Gouvernement Francais," the prize most coveted by the great architectural schools of the country, has been won by the Architectural Department of the Catholic University of America, Prof. Frederick Vernon Murphy, head of the department.

New Uses for Face Brick

There is a growing tendency among architects and contractors to use brick and face brick for decorative purposes no matter what material is used for the main structure, according to Mr. A. T. Wintersgill, sales manager of Pacific Clay Products. One of Mr. Wintersgill's hobbies is to create new uses for brick, in the manufacture of which he has been engaged for many years.

"This trend toward the use of brick for giving 'color' to buildings in Southern California is noticeable in homes as well as in office buildings, schools and factories," says Mr. Wintersgill. "It is especially true in hillside homes.

Etchers to Have Exhibit

The annual exhibition of the California Society of Etchers will be held September 1 to 15 in the gallery of Vickery, Atkins & Torrey, 550 Sutter street, San Francisco. The California Society of Etchers is a group of men and women living in northern California, especially, but with memberships in Honolulu, Chicago, Paris and other large cities. The Society is an old one and ranks among its past officers some of the most noted names in art in the history of the Pacific Coast.

Granted Certificates

The following have been granted architects' certificates by the California State Board of Architecture, Southern District: G. Lawrence Ott, 5719 Victoria avenue; Robert B. Stacy-Judd, 5030 Hollywood boulevard; Huntington Barker, 132 N. Hobart boulevard; Frank H. Chantrill, 4454 Leavitt street, all of Los Angeles, and Rube F. Frodin, 30 N. Michigan avenue, Chicago, and Everett T. Babcock, 649 La Lona drive, Pasadena.

Apartment Houses

At Clay and Powell streets, San Francisco, Mr. Herman Hogorefe, 625 Powell street, will build a six-story and basement apartment house from plans by Architect Edward E. Young, 2002 California street. The estimated cost is $150,000. Mr. Young has also completed plans for a six-story Class C brick and steel hotel to be built on Ellis street, between Hyde and Leavenworth streets, San Francisco, for Mealy & Collins.

Palo Alto Double House

Architect Joseph L. Stewart has completed plans for a two-story frame double house to be built on Seneca street, Palo Alto, for Mrs. N. E. King, and estimated to cost $14,000. Mr. Stewart is also at work on plans for sixteen frame dwellings to be built in Ingleside terrace, San Francisco, at an approximate cost of $15,000 each.

New Partnership

Mr. Alfred H. Vogt, general contractor of San Francisco, announces a change in the firm name to Vogt & Davidson, Inc. Mr. John D. Davidson, who has been associated with Mr. Vogt for the last five years, becomes junior member of the firm. Among the buildings constructed by Vogt & Davidson are the new Alameda Sanitarium, Alameda, at a cost of $300,000; six-story apartment house in San Francisco at a cost of $100,000 and the new Harbor Emergency Hospital for the City of San Francisco at a cost of $125,000. The San Francisco office is at 185 Stevenson street and the Oakland headquarters is in the new Builders' Exchange building.

Apartment House Contracts Let

Within the past month Architect C. A. Meussdorffer, 785 Market street, San Francisco, has awarded contracts for the construction of two large apartment houses in San Francisco, one on Mission street, south of 26th, for Mr. George Holl, to cost $100,000 and the other for Dr. C. A. Bricca, on Green street near Jones, to cost $200,000.

Ice Skating Rink

San Francisco is destined to again have an ice skating rink. Promoters have secured a lot on 48th avenue and Engineer James T. Ludlow has been commissioned to prepare plans for a suitable building. The rink will be 80 by 120 feet.

Addition to Insurance Building

Another addition is planned to the Pacific Mutual Life Insurance building, Los Angeles, estimated to cost $500,000. Messrs. Schultze and Weaver are the architects.

County Hospital Building

Architect R. A. Herold of Sacramento, has been commissioned to prepare plans for an administration building at the Sacramento County Hospital.

Colusa High School

Architects George C. Sellon and company of Sacramento have completed plans for a new high school building at Colusa to cost $200,000.

$30,000 Berkeley Home

An Italian home is to be constructed in Claremont, Berkeley, by Mr. Walter Genesy, from plans by Architect W. E. Schirmer, Thayer building, Oakland.

San Francisco Theatre

Warner Bros. of Hollywood have leased a new moving picture theatre, which Architects Rousseau and Rousseau are planning for 9th and Market streets, San Francisco.

Schools of Architecture

UNIVERSITY OF WASHINGTON

The Architectural Department of the University of Washington recently celebrated its tenth birthday, simultaneously with its admittance to the Association of Collegiate Schools of Architecture. Starting with twelve students in 1914, it now has fifty-eight majoring in architecture with a corresponding increase in instructing staff and equipment. The Department has many worth-while plans for its future development, keeping pace with the growth of the University.

UNIVERSITY OF IDAHO

Prof. Rudolph Weaver announces the closing of the second year of the School of Architecture of the University of Idaho with an increase to twenty-eight students over twelve of the previous year. Some of the students are taking the course as a preparation for related fields, which he believes to be one of the opportunities of architectural departments. In fact, it is as important a function in Prof. Weaver's estimation to keep men from entering the field of architecture who are not temperamentally qualified and diverting them into proper calling, as it is to find the right men and train them definitely for the profession. The coming year he will have an assistant professor and additional equipment.

STATE COLLEGE OF WASHINGTON

Professor Stanley Smith reports a successful year with his Department of Architecture at the State College of Washington. Some of the school work has been exhibited through the State and a successful exhibition was held recently at the College, in connection with the Department of Engineering. Professor Smith and his assistants have in connection with their work, been enlightening the public over the radio on such subjects as "How to Select an Architect," "Duties of an Architect," "The Outlook for the Architectural Profession" and "Small House Planning."

The Seven-Day-Week Church

The Bureau of Architecture of the Methodist Episcopal Church, with offices at 1701 Arch street, Philadelphia, and 58 E. Washington street, Chicago, has prepared a 32 page monograph entitled "Building the Seven-Day-Week Church." The monograph has been circulated among 10,000 Methodist Episcopal City pastors by the Board of Home Missions and Church Extension of that Denomination. The purpose of the booklet is to stimulate church building in such a way as to adequately provide for the requirements of a modern city church. The booklet undertakes to emphasize the matter of making an individual study of the requirements of each building project.

COMMUNICATIONS

A Los Angeles Complaint

Editor, The Architect and Engineer,
Sir:

That article in the July issue on "Why Have an Architect?" is okeh. The old adage about being "penny wise and pound foolish" finds ample justification in the case of the average prospective client.

As a case in point, a prominent Hollywood builder "took the bull by the horns" a few months ago and sent out a circular "confidential" letter which all Los Angeles architects will remember. I keep it on file to show my clients. This letter contained an offer to the architect, on the part of the builder, of 3% of the cost of all contracts coming to the builder through the office of the architect.

The matter was later brought to the attention of the Builders Exchange here, and a second letter then followed from said builder in which he apologized (?) for his "3% bribe."

This town is over burdened with this kind of stuff, but its not often that they come straight out in print with it, as this builder did!

ERNEST I. FREEZE.

High Grade Publication

Editor, The Architect and Engineer,
Sir:

I cannot resist offering you congratulations upon the thoroughly high grade make-up of "The Architect and Engineer" in a general way, and particularly this month's issue, which of course, naturally appeals to me and our other Pacific Gas and Electric officials because of its principal subject, our new building.

Yours very truly,
CHAS. L. BARRETT.
Assistant Treasurer,
Pacific Gas and Electric Company.

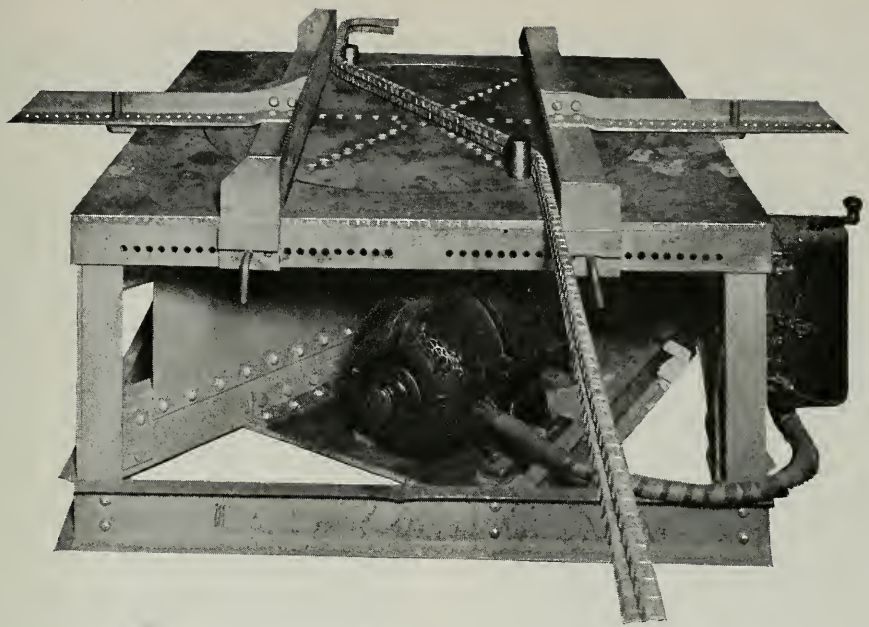
BOOK REVIEWS

Edited by
CHARLES PETER WEEKS

Grade School Buildings, Book Two, by William Bruce; 339 pages of photographic illustrations and floor plans; 60 pages of text; price $10. The Bruce Publishing Company, 354 Milwaukee St., Milwaukee, Wisconsin.

The book is profusely illustrated with photographic illustrations and floor plans of one hundred and forty-three grade school buildings designed by the foremost schoolhouse architects in the United States. The plans range from the smallest to the largest in size, and are suited to every type of school organization in the average size city, large town and small town. It would appear that special care had been taken to present examples in modern school architecture in which the practical and economical arrangement has been combined with grace and dignity in design.

The compiler has included instructive articles on Elementary School Buildings, Size of Classrooms, Artificial Lighting Systems, Development of School Grounds, and Dependence of School Architecture upon Educational Engineering by authorities in the field of school architecture.



This Machine Will Bend Reinforcing Bar Steel

After numerous attempts by inventors and manufacturers to produce a machine that would bend reinforcing bar steel, success has been attained by a manufacturer. The Multiple Bar Bender Co., has brought out a machine that will bend six ½″ square bars, putting two bends in each bar at one operation. As an alternative the machine will take two 1¼″ square bars and put two bends in each bar at the one operation; also certain kinds of stirrups.

The machine was invented by Mr. J. J. Cavagnaro, a San Franciscan, who spent nearly four years bringing it to its present state of perfection. One of these machines has been purchased by Gunn, Carle & Co., and installed in its warehouse at 10th and Bryant streets, where it is available for reinforcing steel contractors.

The Multiple Bar Bender Co. is headed by Messrs. H. Henning as manager, C. A. Henning, attorney, and J. J. Cavagnaro, treasurer.

Steel Magnate Honored

When Miami University conferred upon Mr. Geo. M. Verity the honorary degree of Doctor of Laws at this year's commencement, an unusual touch of interest was added to the occasion. Hon. James J. Davis, Secretary of Labor, who has risen to his position from the ranks of the steel worker, delivered the commencement address. His University has been that of toil, for he was an iron peddler. At the age of fourteen he went to work in the mills. Mr. Verity is president of The American Rolling Mill Company. He entered upon his career with only the advantages of a public school and business college training.

Both of these men won their enviable positions by sheer courage and undaunted leadership.

In conferring the degree President Hughes said:

"Upon you, George M. Verity, executive, manufacturer, industrial leader, leader in public affairs, in recognition of your distinguished ability in the manufacturing world, of the great industry which has developed under your generous leadership in Butler county, of the strong organization built up by you through co-operation and appreciation, of the great contribution you and your colleagues have made to the city of Middletown and to Butler county through your leadership and support and encouragement of all enterprises for the public good, and also because you have stood for resident management and against the evils of non-resident direction in industry; by vote of the University Senate, with the approval of the Board of Trustees, and by the authority granted by the State of Ohio, Miami University confers the degree of Doctor of Laws."

The hundreds of persons fortunate enough to hear the commencement address and witness the honoring of one of America's prominent industrial leaders, could not help but be impressed with the fact that America is truly the land of opportunity, where work well done is considered worthy of the highest recognition.

Frame Hospitals Must Go

Frame hospital buildings in Oakland must go. This is the edict of Frank Colbourn, city commissioner of Public Health and Safety, who announces an ordinance is being prepared which will compel all frame hospital buildings in Oakland to be abandoned.

The ordinance will provide a reasonable length of time in which to vacate the buildings, but those considered the greatest fire hazards will be required to comply with the ruling first.

Blue Diamond Company of Los Angeles in Control of Vast Gypsum Deposits

By KAY M. GRIER
Executive Representative Blue Diamond Company
Los Angeles, California

THE "End of the Trail" has been reached after a three year search by the Blue Diamond Company of Los Angeles for an "ultimate" deposit of gypsum.

On the highest peak of a mountain range, about thirty miles southwest of Las Vegas, Nevada, Blue Diamond engineers located what we believe the richest deposit of pure gypsum in western America. It shows a volume of more than 10,000,000 tons of rock in place and presents the opportunity for an unusually economical operation.

It is not uncommon for Blue Diamond to build new units of production or extend its operations into new fields. But there seemed to be more romance—even a touch of adventure and daring—in developing this new deposit than in any other previous exploit. It meant the absolute abandonment of all other gypsum properties owned or leased by the company in California, Nevada and Utah in addition to a cash outlay of more than a million dollars.

It so happened that we found the purest and whitest gypsum capping the highest peak in the desert, so we got little assistance from nature. It required the building of eleven miles of private standard gauge railroad to connect with the main line of the Union Pacific. But even this project did not settle the matter of transportation. The rock we wanted was still one thousand feet higher than where the railroad had to stop climbing. No engine could ever hope to get a string of cars to the peak. So that meant an aerial tramway.

The next problem was to provide a means of transportation from the end of the railroad to the quarry, a distance not further than the range of the human voice. But this shortest way was through a rocky, precipitous chasm. And that meant the building of a truck road eight miles long to come into the quarry by the "back door" with provisions and equipment.

Today the job is finished and is a splendid example of enterprise and development. The railroad, tramway and truck road are complete. A camp has been established, machinery installed, a quarry opened and several thousand tons of material shipped to Los Angeles, manufactured into plaster and sold.

Hundreds of tests of gypsum from all parts of the West were made in the Blue Diamond testing laboratories before a final decision was reached to acquire the Nevada property. Even an airplane was obtained by the company and placed at the disposal of Glen R. Bradley, superintendent of the gypsum department, and C. H. Coll, civil engineer, for inspection of various properties.

Due to the fact that so many obstacles stood between the plaster consuming market and that mile high peak in the desert, development of the project in many ways challenged the courage and enterprise of the Blue Diamond organization. There was no secret about the extent and quality of gypsum that lay at the top of the desert mountain. Others had known it to be there for many years but all had shunned the difficulty that stood in the way and the tremendous expense involved.

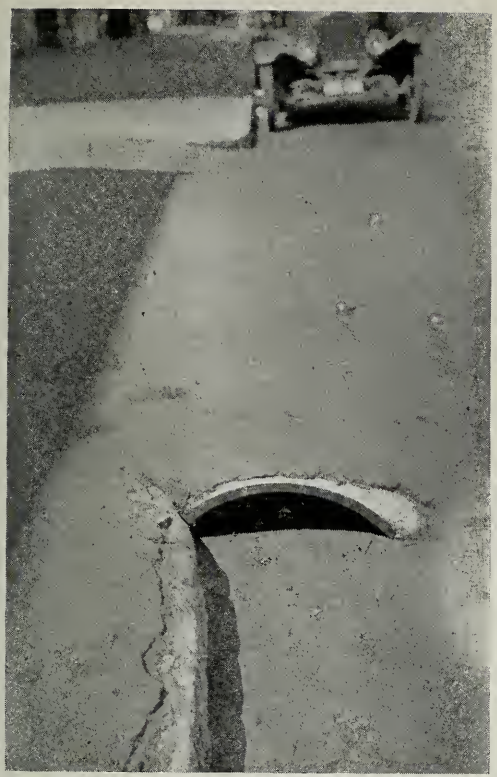
Until the quarry floor is opened sufficiently to permit heavy blasting, the rock is being loaded by hand. As the quarry floor is extended a steam shovel will be put in operation to dig and load the rock into two-ton automatic dump bottom steel cars.

Gypsum produced at the new deposit is shipped over the Union Pacific Railroad to Los Angeles where the company has a modern plaster mill on its thirty acre tract in the heart of the city's industrial district.

In addition to manufacturing a large quantity of hardwall and finishing plaster for the building trade of California, which is distributed by Blue Diamond and three hundred wholesale dealers, the company also furnishes a vast quantity of casting plaster to the moving picture studios of the Southland.

Promotion for Engineer

The Robert W. Hunt Company, inspecting, testing and consulting engineers, with general offices at Chicago, Illinois, announces the appointment of Mr. Fred M. Randlett as district manager of the Pacific Northwest territory. Mr. Randlett has been chief engineer of the water department of Portland, Oregon, for the past eight years, during which time he had direct charge of the large and important addition to the water supply and distribution system of the City of Portland; previous to that time he was engaged in the engineering department of the New York, New Haven & Hartford Railway and Stone & Webster, Inc. Mr. Randlett is a member of the American Society of Civil Engineers, the American Water Works Association and various other engineering societies. Mr. Randlett will have his headquarters in both Portland, Oregon, and Seattle, Washington.



(Fig. 1) FIRST ARMCO PART CIRCLE CULVERT INSTALLED BY CITY OF SANTA CRUZ IN NOVEMBER, 1910. IN EXCELLENT CONDITION WHEN INSPECTED SEPTEMBER, 1924.

(Fig. 2) SHOWING METHOD OF INSURING A PERFECTLY SOLID BEARING AT THE BASE OF PART CIRCLE ARCHES.

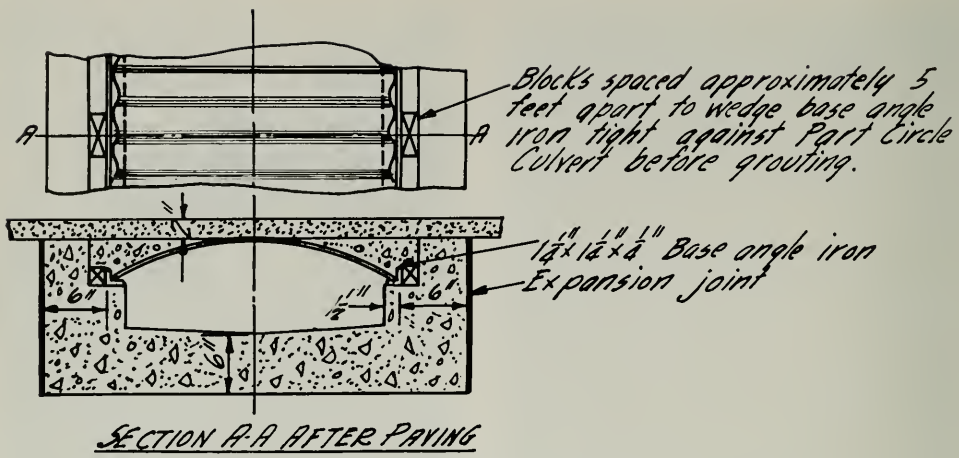
Recent Developments in Part Circle Culvert Practice

By J. C. BIDWELL

ALTHOUGH in one sense part circle culverts may be said to have long ago passed out of the experimental stage, many thousands of them having been employed in various parts of the Pacific Coast and the Southwest for upwards of fifteen years, it is true that continued experience gives rise to modifications and improvements of design from time to time. The rapidly increasing weight and number of vehicles on the streets of municipalities has a strong bearing on this as on almost every other phase of street design. Nearly all municipalities are employing heavier gauges of corrugated iron than they did twelve or fifteen years ago. Fourteen gauge material is now commonly employed where the waterways pass under the sidewalks, and ten gauge and even eight gauge across the streets. New designs have been worked out and successfully employed for the elimination of inlets and outlets of the kind that occupy a portion of the gutters and for utilizing the entire width of the pavement for vehicle traffic.

Caring for the surface drainage on a large proportion of the streets of a municipality by part circle culverts effects important savings as compared with the installation of a complete storm drainage system with inlets at practically every intersection. And it is far preferable to the use of open swales or gutters to carry the drainage water to more widely distributed openings. So any improvements in their design and use become of great practical importance. Nearly all California municipalities employ this type of drainage to a greater or less extent. It is especially well adapted to cities of moderate size having fairly adequate slopes toward natural drainage ways, and to the residential and suburban districts of large centers like Oakland, San Francisco and Los Angeles.

The photograph (Fig. 2) and the drawing (Fig. 3) show a method of installing these arches in their concrete bases



(Fig. 3) PART CIRCLE INSTALLATION DETAILS, SHOWING CROSS SECTION OF TYPICAL PART CIRCLE INSTALLATION

(Fig. 4) SHOWING OLD DIP ON WEST SIDE OF B AND 18TH STREETS, BAKERSFIELD. NOTE RAVELING OF CONCRETE CAUSED BY JOUNCING VEHICLES

which has certain practical advantages. Experience has demonstrated that the concrete should be not less than six inches thick at the bottom and sides. The use of angle iron (usually 1¼"x1¼" x¼") to receive the thrust at the edges of the arches has been found useful out of proportion to its cost. The best practice is to block these angle irons out from the shoulders at intervals of approximately five feet so as to wedge the base angle iron tightly against the edge of the corrugated arches. Then the edges are grouted in as shown in the photograph. This results in an absolutely rigid bearing at the base of the arches. The use of the angle iron is to some extent an insurance against the dangers of faulty installation work.

Photographs numbers four and five show very clearly the improvement effected by installing corrugated arch culverts in place of the old fashioned dips or swales. These dips or surface sewers constitute very serious obstacles to rapidly moving vehicles. The following letter from the Chief Engineer of the San Diego Fire Department, Mr. Louis Almgren is perhaps a sufficient comment on this phase of the matter:

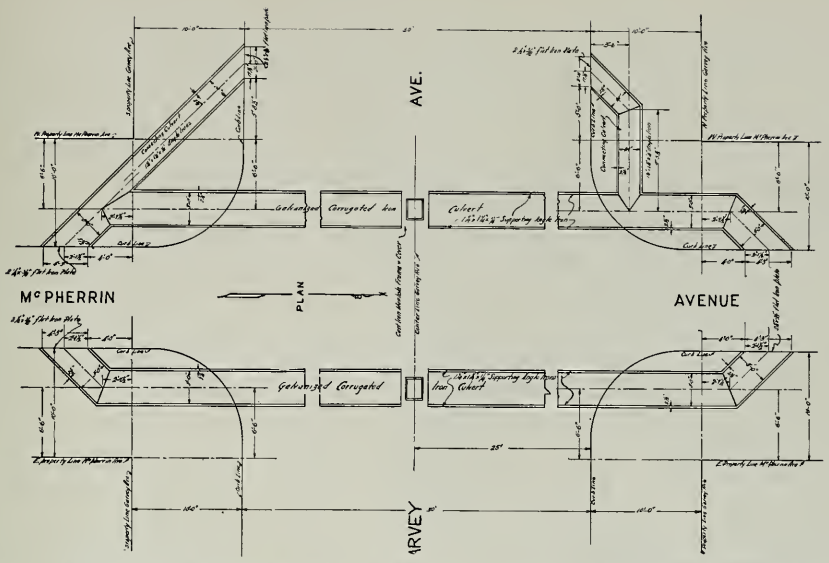
"Mr. F. A. Rhodes, Manager,
Department of Operations,
City of San Diego, California.

Dear Sir:

"In reply to your inquiry as to the number of Firemen injured in apparatus going over the dips in the pavement at street crossings, will state, that on January 16th, 1924, Engine Company #6, in responding to a call of fire at the Farmers Market at 12th and G streets, the apparatus in going across First street at G street, struck dip and threw off three members of the Fire Department injuring them as follows:

"Captain Kirkseter, bruises.

"Engineer H. L. Golay, injured base of spine.



(Fig. 7) LAYOUT FOR MONTEREY PARK PART CIRCLE, SHOWING STREET INTERSECTION

"Stoker L. Nelson, injured right foot and knee.
"Although the above is the only case we have where Firemen were actually injured, we have had a number of narrow escapes in doing so, as these dips are very dangerous and a great drawback to the apparatus in quickly responding to alarms, and I sincerely hope to see the day when they are done away with."

As will be noted from photograph (Fig. 4), the open dips have other drawbacks besides those of traffic obstructions. The jounce or thrust of heavy vehicles tends to crack and ravel the concrete at the bottom of the depressions, making frequent repairs necessary. These hollows also serve to hold water for some time after a rainstorm and thus to make the intersection slippery and dirty, and sometimes to drench passers-by with muddy spray from the wheels of passing vehicles. For this reason, they are very unpopular with pedestrians as well as autoists.

Figure 6 shows a recent installation of the heaviest gauge of part circle culverts at the intersection of California and Baker streets, in Bakersfield. Grouting in had been completed and the culverts were ready to receive the pavement covering.

Figures 7 and 8 illustrate one of the most important improvements brought about in recent years in part circle culvert practice. Many California municipalities are growing so fast, and motor vehicles of all sorts are multiplying at such a rate that the streets are seriously congested, and the carrying out of expensive widening operations is an inevitable development of the not distant future. Under such conditions, it is felt that every foot of pavement width must be available for vehicle traffic. Conse-

(Fig. 5) SHOWING ARMCO PART CIRCLE CULVERT, REPLACING DIP AT B AND 18TH STREETS, BAKERSFIELD.

(Fig. 6) PART CIRCLE CULVERT AT INTERSECTION OF CALIFORNIA AND BAKER STREETS, BAKERSFIELD

quently the method of establishing the culvert inlets and outlets in the curbs instead of in the gutters themselves, and carrying the drainage underneath the sidewalks and across the streets, is being quite generally adopted. The design used at Monterey Park in Los Angeles County, shown in Figure 7, is an admirable one and can no doubt be employed with some modifications by numerous other municipalities. The photograph gives an idea of the smooth and uninterrupted pavement surface which results. Rapid increase of traffic will doubtless result in the adoption of this design in many municipalities where it has not been found necessary hitherto.

Should culverts of this type become obstructed by mud, sand or light debris, the easiest and most effective method of clearing them is the use of a fire hose. On the whole, these drainageways are kept clear of obstacles with very little difficulty. The type of concrete base shown in Figure 5 is preferable on this score to one which involves an acute angle between the corrugated iron and the base.

The same considerations which make the part circle type of culvert desirable at street intersections, also leads to its choice for hundreds of grade crossings of steam and electric railroads. Large numbers of these installations may be seen in the Bay Region which have been giving service, with no reported difficulties, for a dozen years or more.

New Trade Literature

Lupton Steel Shelving — a catalogue describing steel shelving for all kinds of display and storage, including counters, cabinets, drawers, racks, partitions and doors. David Lupton's Sons Company, Allegheney and Tulip street, Philadelphia.

(Fig. 8) GARVEY AVENUE, MONTEREY PARK, AFTER IMPROVEMENTS SHOWN IN THE DRAWING (Page 123) WERE FINISHED
Note smooth and uninterrupted surface

Women's Athletic Club Building, Los Angeles

The ARCHITECT & ENGINEER

SEPTEMBER 1925

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Contents

VOL. LXXXII SEPTEMBER, 1925 Number 3

COVER PICTURE—WOMEN'S ATHLETIC CLUB BUILDING OF LOS ANGELES
Allison and Allison,
Architects

GARDEN—WOMEN'S ATHLETIC CLUB BUILDING OF LOS ANGELES - - - - - - - - - - *Frontispiece*

THE WOMEN'S ATHLETIC CLUB OF LOS ANGELES - - 55
Irving F. Morrow

NEW HOME OF ORINDA COUNTRY CLUB - - - - - - - 77
Frederick Hamilton

RECENT CITY PLANNING INFLUENCES IN EUROPE - - - - 86
Stephen Child

PORTFOLIO OF SKETCHES AND ETCHINGS BY SMITH O'BRIEN - - 91

ELECTRIC HEATING IN THE HOME - - - - - - - - - 98
H. E. Sandoval

"OR EQUAL" - - - - - - - - - - - - - - - 100
F. R. Still

EFFECT OF HYDRATED LIME IN CONCRETE - - - - - - 102
Duff A. Abrams

DEFEATING THE FIRE DEMON WITH METAL LATH - - - - 103
W. B. Turner

CALIFORNIA NEEDS UNIFORM BUILDING LAWS - - - - - 107
Robert Greig

EDITORIAL - - - - - - - - - - - - - - 112-14

WITH THE ARCHITECTS - - - - - - - - - - - - 115

WITH THE ENGINEERS - - - - - - - - - - - - 119

EARTHQUAKE ROOFS - - - - - - - - - - - - 123
J. I. Holder

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GARDEN, WOMEN'S ATHLETIC CLUB, LOS ANGELES
ALLISON AND ALLISON, ARCHITECTS

Frontispiece
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September, 1925

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The Women's Athletic Club of Los Angeles

BY IRVING F. MORROW

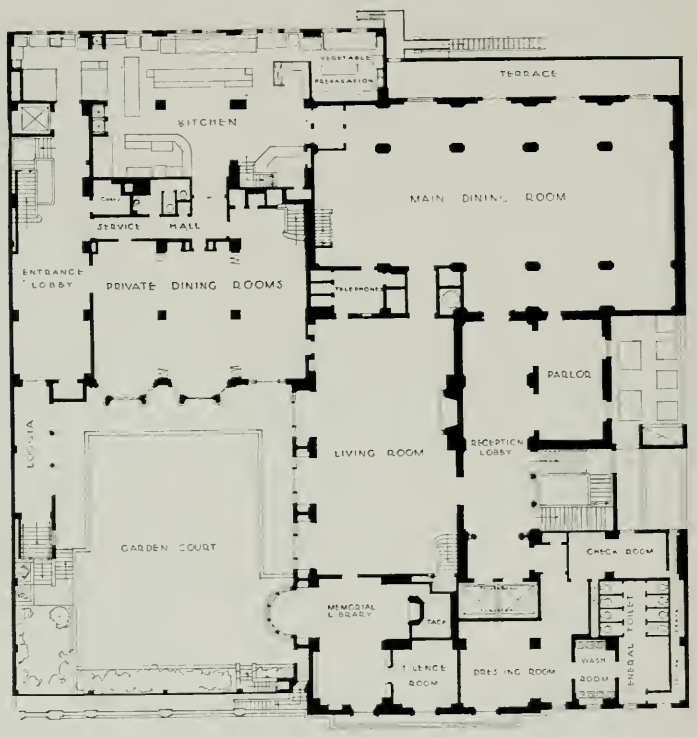
SOME years ago, in reviewing a collection of the school buildings of Messrs. Allison and Allison—which up to that time had formed almost the entire output of their office—I alluded to their growing reputation as "schoolhouse specialists" as an unfortunate circumstance, because such outstanding ability should not be circumscribed by any specialty narrower than architecture itself, and the public stood to be the loser if it did not employ it to its full capacity. I have since been happy to verify the truth of this prediction, not out of any personal satisfaction over finding myself a true prophet, but because the public has been so obviously the gainer through a fuller use of distinguished architectural ability.

The Women's Athletic Club of Los Angeles is the third important club* to come out of Messrs. Allison and Allison's office in the last three years. It is probably unnecessary to indulge any fears as to their becoming "clubhouse specialists," if for no other reason than that there are not enough large clubs built to enable an architect to maintain such a specialty. Besides, the diversity in the aims and organization of such clubs as there are is of itself a necessary incentive to greater variety than exists in the case of schools. (It is also no small advantage that the field, having never come to be recognized as a "specialty," can still be treated as a subject for the play of free intelligence).

The Unversity Club of Los Angeles, the Friday Morning Club, and the Women's Athletic Club, all show a diversity of individuality within a recognizable family resemblance, which marks them as the work of a designer well trained and gifted with something to say. They are soundly traditional without for a moment becoming archaeological or imitative. I have heard Mr. D. C. Allison declare it his conviction that fruitful modernity in architecture is realizable more in planning than in aspects of composition or decorative detail, which must of necessity

*See "The University Club of Los Angeles, Architect and Engineer, January 1923; and "The Friday Morning Club of Los Angeles," Architect and Engineer, October 1924.

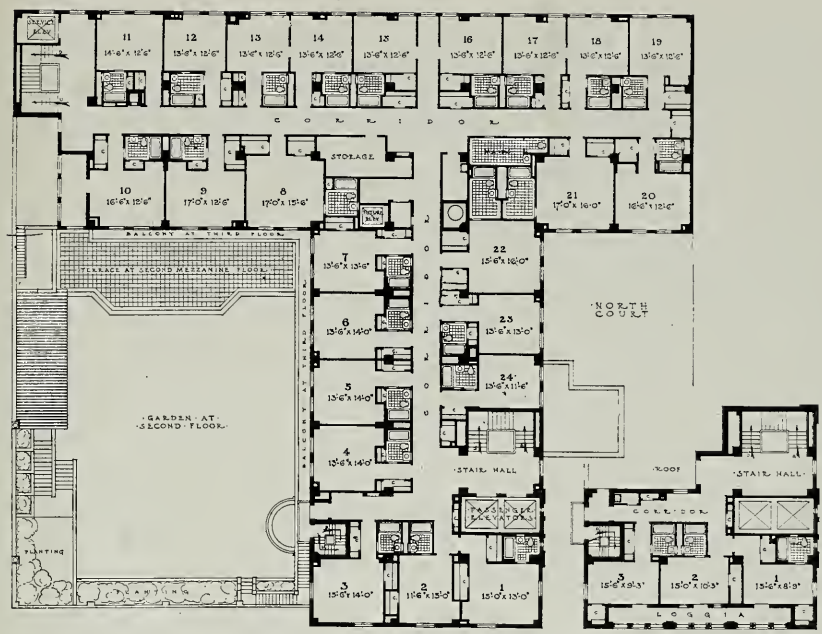
remain more recognizably traditional. From this point of view the Women's Athletic Club is not unjustified in pressing its claims as a modern building. The plan is conspicuously unacademic—in a casual glance, on paper, it might even appear incoherent. It has been worked out, however, as the horizontal direction of a three dimensional reality, without regard to the irrelevant two dimensional pattern abstractions of academic convention. For this reason it requires study for appreciation, but amply repays the study given. (Simultaneous running and reading are rarely consistent with reality). Areas are related and proportioned, not according to preconceived (and hence inapplicable) canons, but solely with reference to the actual uses to be served and the effects to be ob-



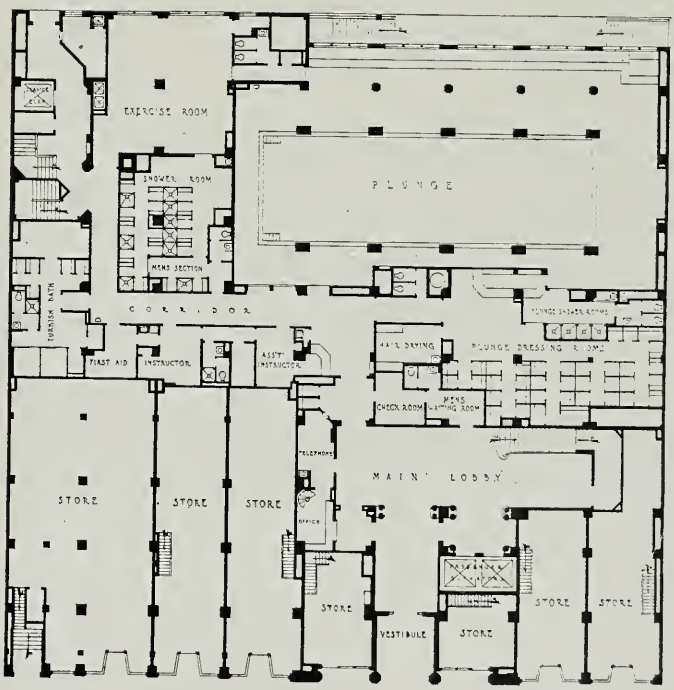
SECOND FLOOR PLAN, WOMEN'S ATHLETIC CLUB, LOS ANGELES
Allison and Allison, Architects

tained. To understand such a plan imagination must supply the missing vertical dimension, as well as the features of decorative treatment. Or better still, a walk through the building will convince one of the objective, realistic quality of its conception. Such a visit, of course, is the only way to realize the part played by the free use of richly painted decoration, as well as the charm which comes from glimpses into the garden boldly placed at the second story level, over the roofs of stores. The photographs fail to reveal the importance to the main facade of well executed panels of sgraffito.

This building is, in fact, one of the major achievements of its designers; which is to say, an architectural monument of genuine importance.



TYPICAL AND SIXTH FLOOR PLANS



FIRST FLOOR PLAN, WOMEN'S ATHLETIC CLUB, LOS ANGELES
Allison and Allison, Architects

STREET FRONT, WOMEN'S ATHLETIC CLUB, LOS ANGELES
ALLISON AND ALLISON, ARCHITECTS

STREET FRONT, WOMEN'S ATHLETIC CLUB, LOS ANGELES
ALLISON AND ALLISON, ARCHITECTS

ENTRANCE, WOMEN'S ATHLETIC CLUB, LOS ANGELES
ALLISON AND ALLISON, ARCHITECTS

ENTRANCE, WOMEN'S ATHLETIC CLUB, LOS ANGELES
ALLISON AND ALLISON, ARCHITECTS

GARDEN, WOMEN'S ATHLETIC CLUB, LOS ANGELES
ALLISON AND ALLISON, ARCHITECTS

GENERAL VIEW, WOMEN'S ATHLETIC CLUB, LOS ANGELES
ALLISON AND ALLISON, ARCHITECTS

GARDEN, WOMEN'S ATHLETIC CLUB, LOS ANGELES
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LOGGIA IN GARDEN, WOMEN'S ATHLETIC CLUB, LOS ANGELES
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ENTRANCE LOBBY, WOMEN'S ATHLETIC CLUB, LOS ANGELES
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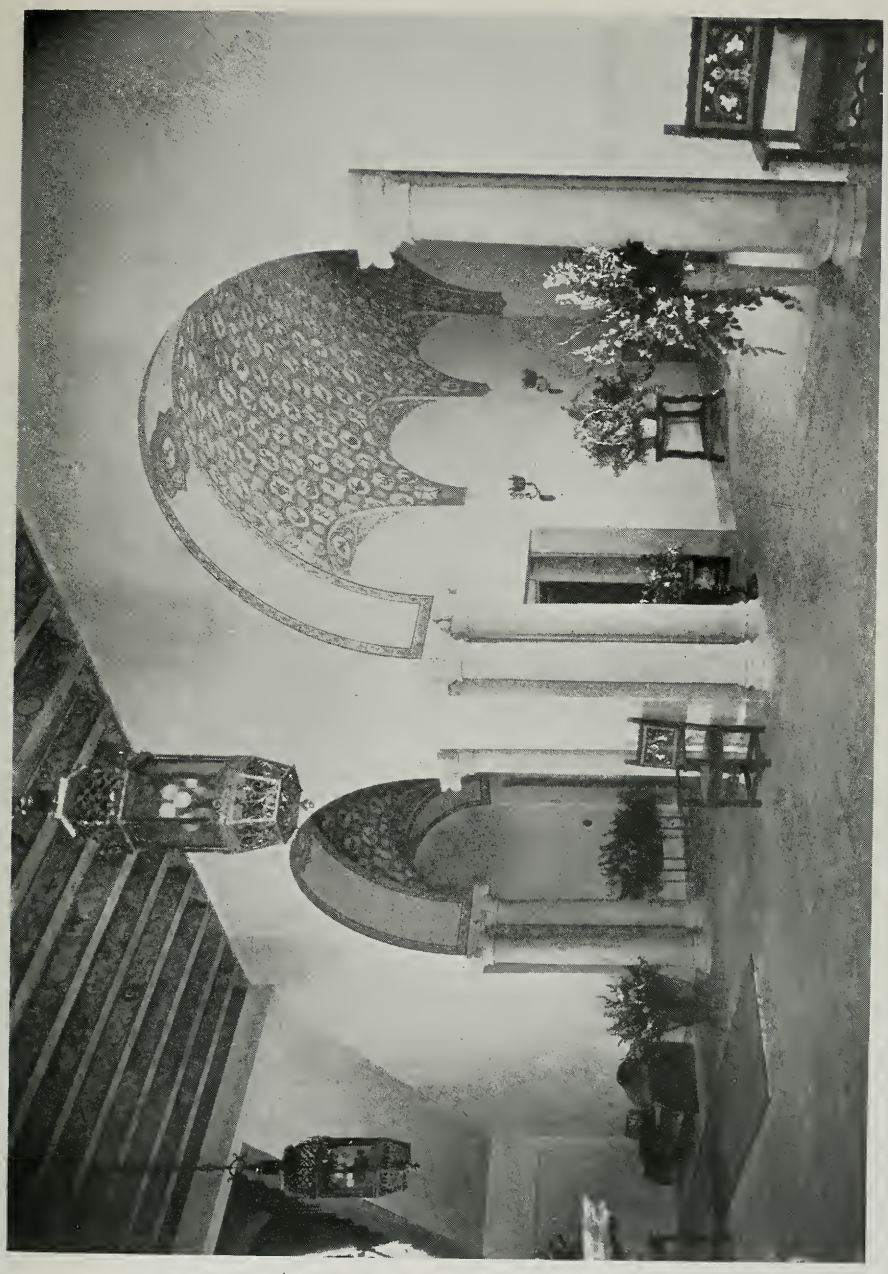

ENTRANCE LOBBY, WOMEN'S ATHLETIC CLUB, LOS ANGELES
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SECOND STORY STAIR HALL, WOMEN'S ATHLETIC CLUB, LOS ANGELES
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ARCHITECTS

LOUNGE ROOM, WOMEN'S ATHLETIC CLUB, LOS ANGELES
ALLISON AND ALLISON, ARCHITECTS

LOUNGE ROOM, WOMEN'S ATHLETIC CLUB, LOS ANGELES: ALLISON AND ALLISON, ARCHITECTS.

LOUNGE ROOM, WOMEN'S ATHLETIC CLUB, LOS ANGELES
ALLISON AND ALLISON, ARCHITECTS

MAIN DINING ROOM, WOMEN'S ATHLETIC CLUB, LOS ANGELES
ALLISON AND ALLISON, ARCHITECTS

MAIN DINING ROOM, WOMEN'S ATHLETIC CLUB, LOS ANGELES
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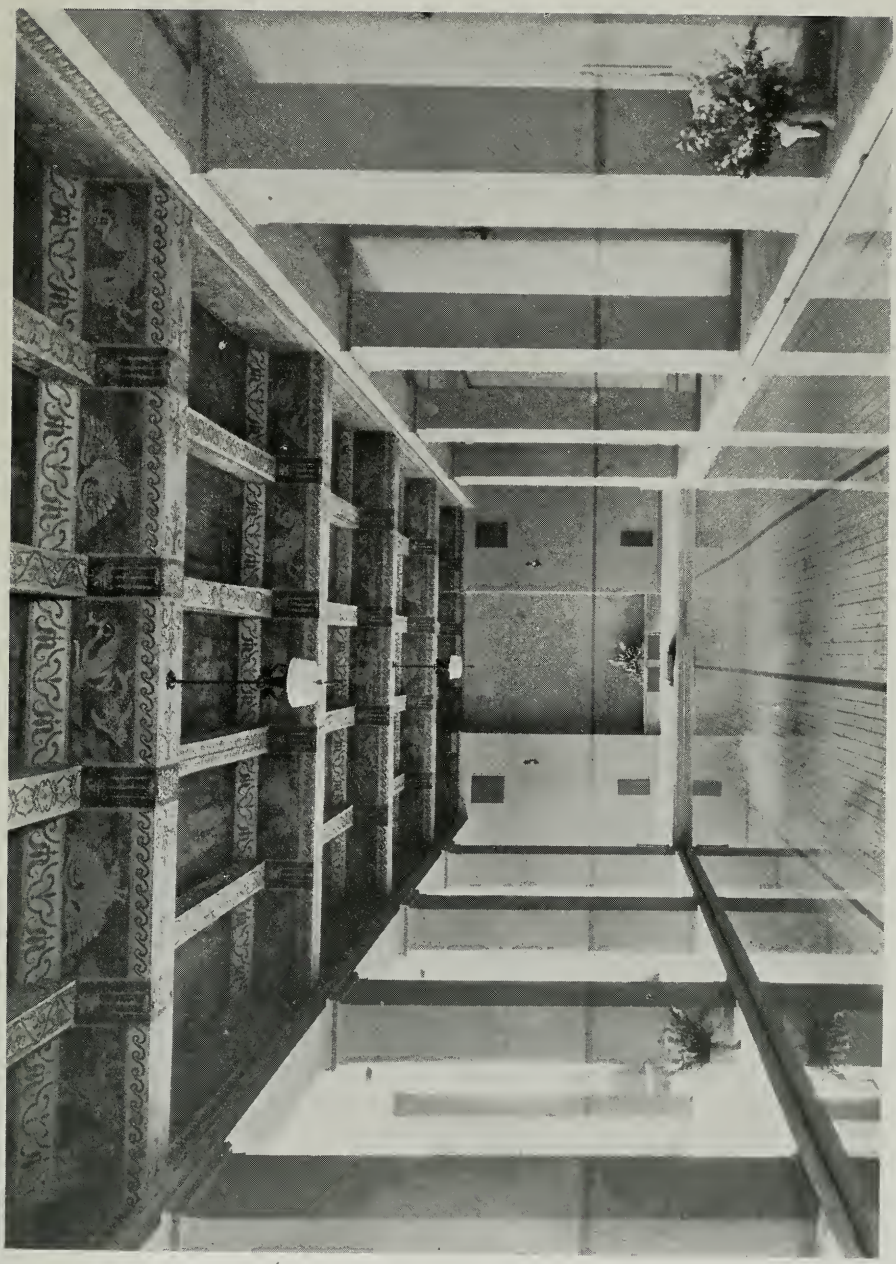
LIBRARY, WOMEN'S ATHLETIC CLUB, LOS ANGELES
ALLISON AND ALLISON, ARCHITECTS



SWIMMING POOL, WOMEN'S ATHLETIC CLUB, LOS ANGELES
ALLISON AND ALLISON, ARCHITECTS

ENTRANCE, ORINDA COUNTRY CLUB, ALAMEDA COUNTY, CAL.
W. H. CRIM, JR., AND HAMILTON MURDOCK, ARCHITECTS

New Home of Orinda Country Club

By FREDERICK HAMILTON

"That rocky promontory over there is just the site for a clubhouse. Let's make the building an intimate part of that great rock—just a continuation of it upward."

THUS was the general conception of the newly completed Orinda Country Club home formed in the minds of its builder, Mr. E. I. deLaveaga, and his architect, Mr. Hamilton Murdock. The result is a building that moulds into the hills upon which it stands with most pleasing harmony and that enriches these same hills with its gay colors, its lights and shadows.

The site chosen for the building is a leveled bluff rising sheer some fifty feet above the 18th green and commanding a most magnificent view of the long, graceful 18th fairway, Laguna Cascade (Lake Cascade), and the general valley of Orinda.

Inasmuch as the clubhouse is the central architectural feature of a new community known as Haciendas del Orinda and in which the Spanish note has predominated even to the naming of the roads and scenic spots, the architect quite naturally chose the Spanish theme, blending in with Italian renaissance for decoration and individuality.

While the major portion of the building rests upon the rocky eminence it was found necessary to bridge a portion of the structure over a sharp canyon, which offered some interesting foundation problems and aided the architect in avoiding the square bulk of the ordinary "Spanish" building. Many breaks in the roof lines, several jutting balconies and numerous arches serve to further soften the silhouette and complete a most pleasing composition.

The exterior of the building is finished in a plaster, formed and colored to give somewhat the effect of a heavy hewn rock. The buff color seems natural companions to the browns, tans and greens of the clubhouse setting.

The interior plastering suggests at once the walls of a building ages old instead of still fresh with the odor of lime. Both in color and texture the effect is soft and mellow.

The ceilings of the living room, the lounge and the spacious library are all panelled and the decorator has brought them into a complimentary harmony with the walls by rubbing blue, green and gold into a polychrome blend, varying the tones in the different rooms. The ceilings supply the color to the woodwork, the trim of doors, windows and other details being a weathered walnut.

Lighting fixtures are Spanish iron with candles. On the wide veranda, an outdoor and festive effect is obtained by special fixtures that resemble large Chinese patterns, but that are cleverly contrived to a Spanish shape and color scheme.

The restful impression that the eye receives from the exterior of the building is duplicated within. While there are no extraneous geegaws in a struggle for effect, there are alluring arches, romantically suggestive balconies, charming alcoves and similar variations a-plenty. One of the most strikingly beautiful features of the entire building is the abundance of light welcomed through the great arched windows. The pattern employed in the design of the window frames is repeated in the openings between dining room, library and lounge.

The building has been carefully and systematically planned to serve the membership of the club with the greatest possible efficiency.

The main floor is given over to the spacious lounge flanked on either side by the dining room and the library. The veranda, which is completely enclosed and runs the entire length of these three rooms will serve in an emergency, at least, and perhaps more often than that, as a supplementary dining room.

Across a narrow passage from the dining room are the office and check rooms.

At the end of the dining room the pantry and kitchen are situated and the men's grill adjoins them, although it is completely equipped for service independently of the kitchen.

ORINDA COUNTRY CLUB FROM EIGHTEENTH GREEN
W. H. Crim, Jr., and Hamilton Murdock, Architects

Servants' living quarters are situated in the rear of the building, comfortable rooms with bath being provided so that the employees can make their home at the clubhouse.

The mezzanine floor is devoted entirely to the convenience of the ladies. A lounge room that overlooks the principal rooms of the main floor is situated about midway of the mezzanine. Here also are ladies' lockers and dressing rooms. Stairs at both ends of this floor provide easy access from all parts of the building.

The second floor, which is at two levels, is divided into living rooms, each equipped with bath. One private dining room is also located on this floor.

The utilitarian rooms from the golfers' point of view are situated in what is known as the basement, although it is on a level with one of the entrances. Lockers and showers occupy this entire floor.

The sub-basement, with the exception of a portion reserved for the golf professional and caddy master, is the utilitarian portion of the building, according to the club manager, here being the refrigerating plant, heating plant and storage rooms.

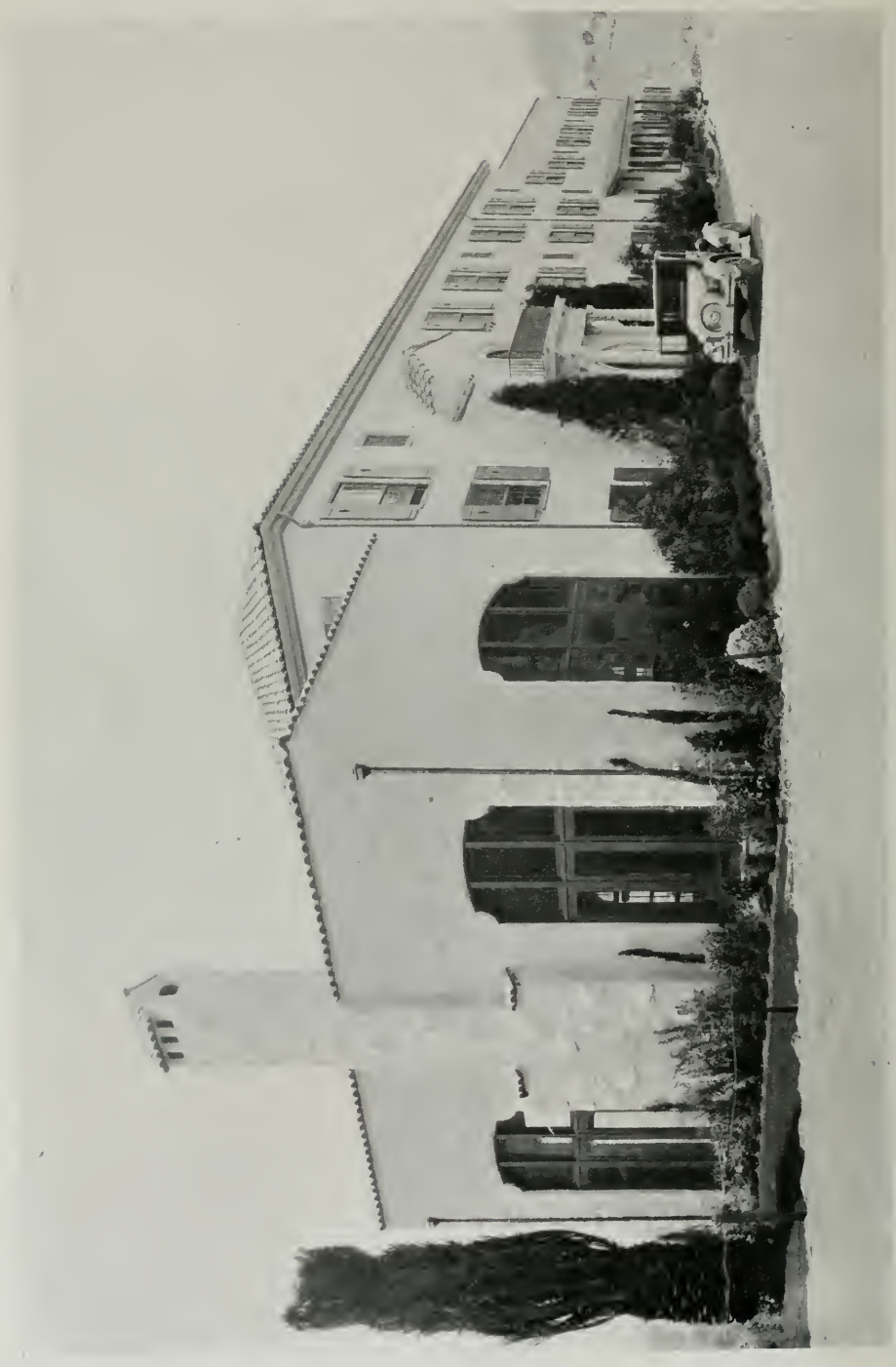
The arrangement of these two basements permits the golfer to leave the main floor of the clubhouse, descend to the locker rooms, array himself for the green, descend another floor, where he passes the pro-

CANYON VIEW, ORINDA COUNTRY CLUB, ALAMEDA COUNTY
W. H. Crim, Jr., and Hamilton Murdock, Architects

fessional's shop to the caddy room, making such acquisitions as he desires enroute, thence starting upon his long and hopeful walk upon the course itself. A well-planned and efficient arrangement that saves useless steps and confusion.

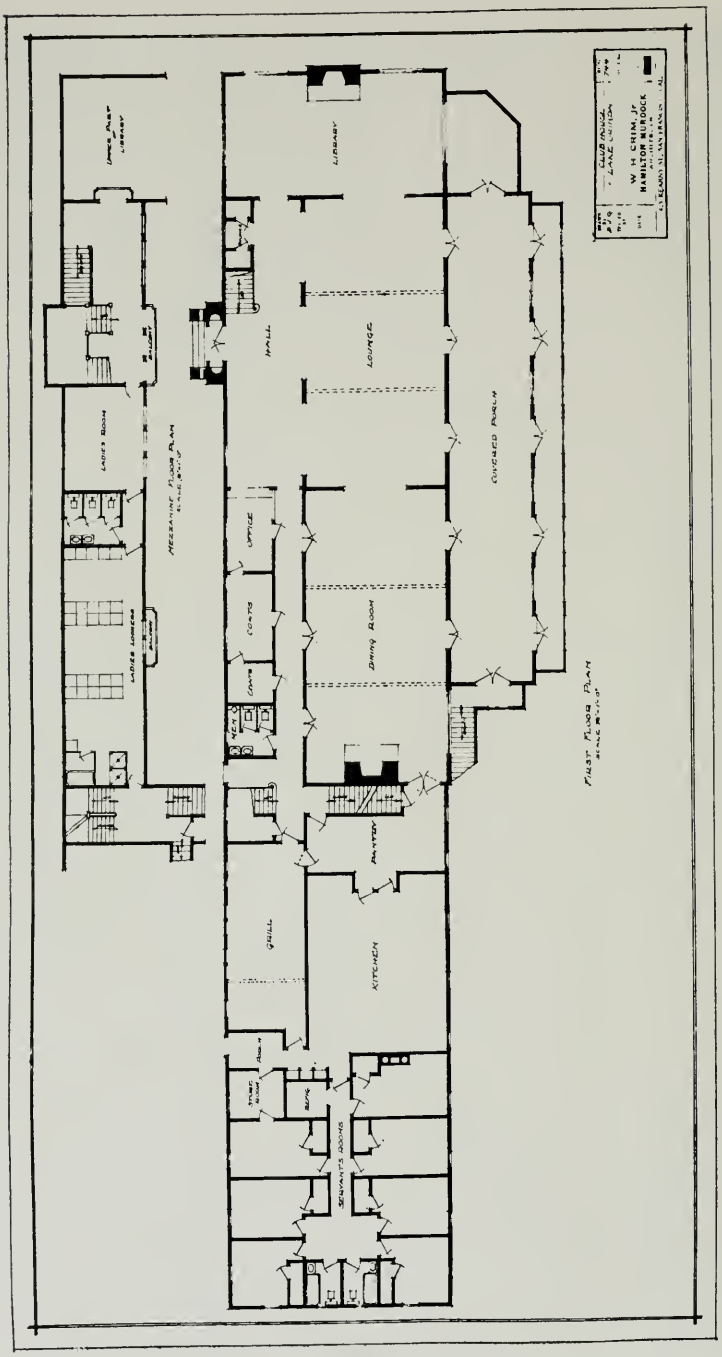
The building is electrically heated throughout; the kitchen and grill are equipped with electric ranges and broilers and all rooms are heated with Magnaray units.

Future enlargements of the clubhouse have been provided for in the general plan. Expansion will be in the form of wings to follow the line of the hill toward the first tee of the golf course.

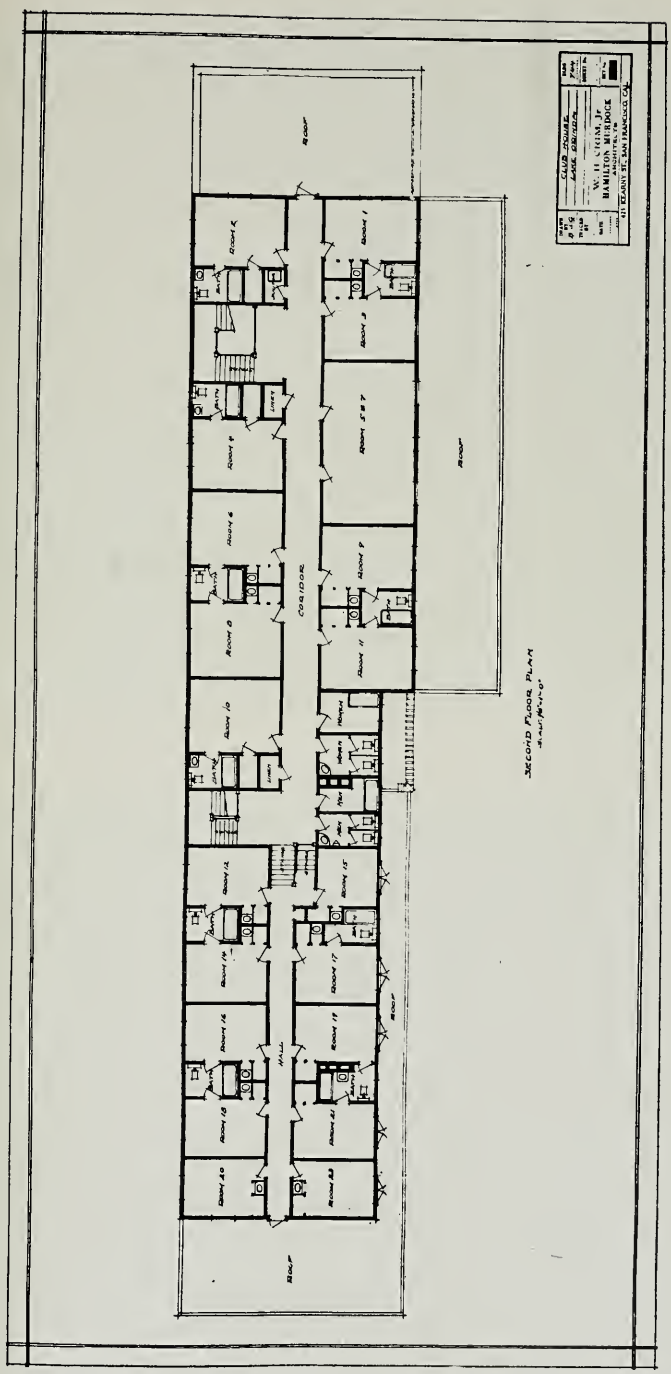


NORTHWEST CORNER, ORINDA COUNTRY CLUB, ALAMEDA COUNTY
W. H. CRIM, JR., AND HAMILTON MURDOCK, ARCHITECTS

LOOKING TOWARD THE MAIN FACADE, ORINDA COUNTRY CLUB
W. H. CRIM, JR., AND HAMILTON MURDOCK, ARCHITECTS

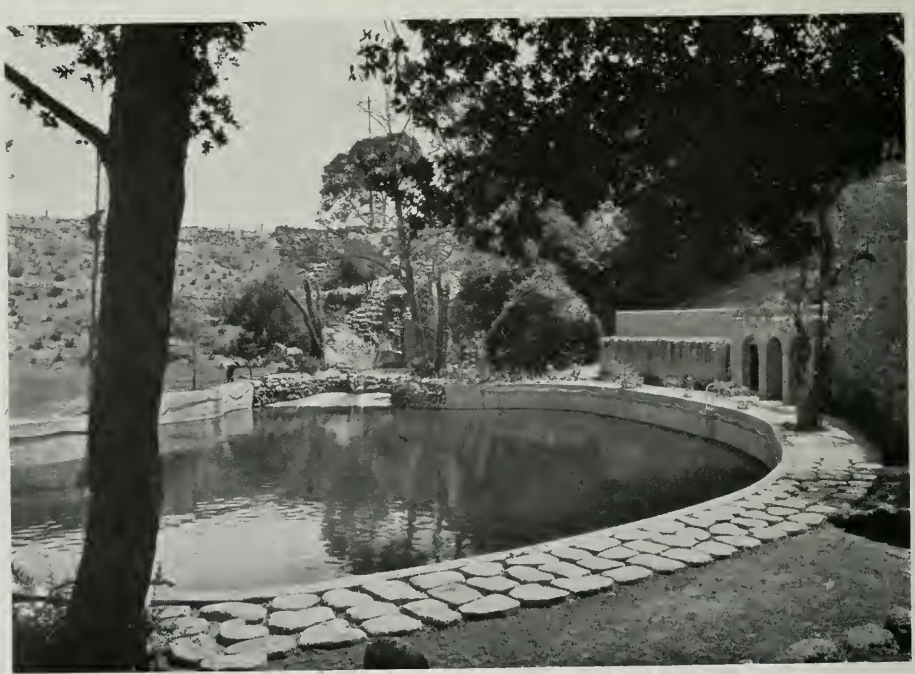


FIRST FLOOR PLAN, ORINDA COUNTRY CLUB, ALAMEDA COUNTY
W. H. CRIM, JR., AND HAMILTON MURDOCK, ARCHITECTS



SECOND FLOOR PLAN, ORINDA COUNTRY CLUB, ALAMEDA COUNTY
W. H. CRIM, JR., AND HAMILTON MURDOCK, ARCHITECTS

COVERED REAR ENTRANCE, ORINDA COUNTRY CLUB
W. H. Crim, Jr., and Hamilton Murdock, Architects



SWIMMING POOL, ORINDA COUNTRY CLUB, ALAMEDA COUNTY
W. H. Crim, Jr., and Hamilton Murdock, Architects

HALL AND STAIRWAY, MEZZANINE FLOOR, ORINDA COUNTRY CLUB
W. H. Crim, Jr., and Hamilton Murdock, Architects

MAIN LOUNGE, LOOKING INTO DINING ROOM, ORINDA COUNTRY CLUB
W. H. Crim, Jr., and Hamilton Murdock, Architects

Recent City Planning Influences in Europe

By STEPHEN CHILD

Editor's Note.—Mr. Child, while in Brussels in connection with Belgian reconstruction problems during the summer of 1920, *attended the series of meetings during which there was inaugurated an international organization "l'Union Internationale des Villes," its purpose to collect, study, brief and promptly distribute current civic information of all sorts classified under convenient headings. With headquarters in Brussels and centers formed or forming in all important countries, this invaluable aid to a clearer understanding of civic affairs and thus to civic progress is now well on the way to fulfilling its purpose as an international clearing house of civic information.*

LEAVING out of consideration for the moment the Garden City movement and its interesting results in England, to which allusion will be made later, recent plans for the development of European cities have been influenced first by their housing conditions, second by their slum removal problems, and third by regional planning ideas, and of these housing has been by far the most important. As to comprehensive city planning itself, as we understand it in America, except in England, comparatively little has been done and even there the comprehensiveness of their work has been until the last year handicapped by their town planning laws, which have limited their efforts to the un-built-upon areas of their cities, and gave them no opportunity, except in the special case of slum removal to do anything at all about the built-up portions. This defect has now been remedied and more comprehensive city planning for English cities is going forward.

For the rest of Europe almost nothing has been done of a really comprehensive character. Very little in the way of thorough preliminary survey work has been undertaken and no really comprehensive major street plan projects prepared. And as for zoning, while the term originated in Germany and the subject is now much to the fore in England, no city in Europe has prepared a general zoning plan and enforced it by law, as has New York and so many of our American cities.

This is not to say that portions of all these phases of city planning have not been undertaken and in certain instances splendidly carried out, witness London's Kingsway and other examples to be noted later, but none of the work of this sort has been along any preconceived, comprehensive plan for an entire city. Furthermore, nowhere in Europe is there anything to compare in comprehensiveness to several of our metropolitan park systems, those of Boston, Mass.; Kansas City, Mo., or Essex county, New Jersey, for example.

All over Europe as a result, of course, most particularly of the great war, there has been and still is a very marked housing shortage. Then in France and Belgium there has been the special and enormous problem of reconstructing homes in the devastated regions. The town planning phases of all this housing work has, except in a very few instances, shown but little that is particularly interesting or important. It has been largely what in England is termed "Site-Planning," the laying out of what might be called new subdivisions on the outskirts of existing towns and the exegencies of the problem, the imperative need for haste, coupled with the fact that in most cases their topography is quite level, has not resulted in many very remarkable plans or developed new features particularly helpful to our conditions.

There is far too little provision for parks and playgrounds and in most cases the roads for these subdivisions are narrow, their pavements often far too narrow and their street corners on too short a radius to meet the requirements of automobile traffic. In fact the automobile has up to now been given quite insufficient consideration anywhere in

Europe, but is getting more in England than anywhere else. A large part of the gasoline used for automotive purposes has been imported, the price is very high (has been as high as 90 cents per gallon), therefore the use of motor cars has not become as general as with us, but with the coming in of supplies from Russian oil fields one may look for great developments in the next few years and along with it much trouble from their narrow streets, old and new.

The "cul-de-sac" idea the "dead-end" street and the "private place" have all been overworked, especially in England—little or no provision is made for parking autos, such an overwhelming problem with us, and bound to become more and more so with them. Furthermore, little of the site-planning for their new housing and the roads to meet their traffic needs has been done with a view to the general conditions of the towns, but has been merely, as above noted, more or less unrelated subdivisions on the outskirts of existing towns.

Throughout Europe government aid for housing is general. This has taken various forms, the nation, the state or county and the municipality, either one or in some cases all three having given financial aid. Most of the houses and lodgings are built to be rented and at far from an economic rent; that is to say rentals are much less than they should be to bring in a fair return on the outlay. This, of course, makes of their housing a form of charity or government aid, a state of affairs not relished here in America. There is very little home ownership, although this idea is growing in both England and Belgium and to a certain extent in Germany.

Except in Italy the greater part of the industrial housing work of Europe has been admirable, taking the form of very attractive homes, often, to be sure, in rows, but often too semi-detached or detached cottages, seldom over two stories in height and remarkably well designed, built and equipped. Unfortunately, we are not doing this in America. Our bank clerks and middle class people are being pretty well housed, but to our laboring man we have said: "You must be content to occupy the cast-off houses of the better paid." This dictum is not only unfair to labor, but entails the continued production of slums.

Various methods of reducing the cost of industrial housing have been employed in Europe, some of which we could readily adopt, for example, mass production, projects of from 300 to 3,000 homes are not uncommon. This implies wholesale purchase of supplies at low prices. Another important factor in their success is the general use of standardization of parts. This is something that, thanks to Secretary of Commerce Hoover, we are beginning to learn more about here. Other means of saving money have been the simplified heating and plumbing methods they have adopted and the very general elimination of expensive cellars —these last were recently described by the writer in this magazine.*

There is comparatively little multi-family or apartment house construction in Europe, save in Italy where it is the rule, most of their recent industrial housing being in the form of first-class tenements, reasonably fireproof, to be sure, but often five stories high with no elevator, and while grouped about more or less ample courts, far too crowded to meet modern ideals. France is doing a little in this line, too, several of their new garden suburbs showing structures of this sort, grouped about their central squares. There is almost none of it in either Germany, Belgium or Holland, except at Amsterdam.

*("Simplified Plumbing and Heating Arrangements Permitting New Inexpensive Homes for Industrial Communities" by Stephen Child, The Architect and Engineer, San Francisco, December 1924.)

Notable examples of industrial housing in England are Well Hall and Roe Green near London, often described and illustrated, the latter most charming. Near Paris a small but most interesting group known as "Les Lilas" and still another for street railway employees at Drancy. In Belgium the groups in the devastated region near Roulers and at or near both Menin and Ypres are particularly attractive. In Holland those at Heerlen in the Limbourg coal mining district, and at Arnhem on the Rhine, are excellent. Good examples in Germany are to be found near Cologne, where there is one colony of 3,000 homes for railway employees and, of course, at Essen the quite luxurious Krupp groups, several of these built during or since the war. In Italy, near Milan, the group known as "Campo Dei Fiores" is one of the best. These are, of course, but a few taken almost at random, but as examples of how their industrial housing problem has been met and successfully solved they are well worth study.

Allusion has been made to slum removal as an influence in the city planning effort of Europe and an earlier very remarkable example, the Kingsway in London, has been mentioned. Liverpool, Manchester, Glasgow and many other English cities have undertaken important effort of this sort. All over Europe are many more, a most ambitious project at Brussels is not yet finished, although a great slum area has been cleared. Completion of the scheme has been delayed by the controversy as to whether or not an elevated railway should cross the city and a new union station be built in the heart of town.

While the removal of the Paris fortification belt can perhaps hardly be classed as slum clearance—still slumlike conditions had been notable near this barrier to the growth of the great city. Several minor slum districts of Paris are, however, being cleared and being rebuilt, in most cases with apartment houses. In the case of the fortification removal some notable groups of apartments have been erected on the replacements of old bastions. At Strasbourg-Alsace an old fortress surrounded by an exceedingly bad slum area in the heart of the city has all been cleared away—the project spoken of as "La grande percee," for the principal feature of the new development is a wide commercial street cutting through this area, to be lined with lodgings or apartments, together with stores and shops, the whole scheme going a long way toward solving the city's housing and congested traffic problems.

Amsterdam, Holland, has now practically abolished its worst slum, claimed to have been the very worst in Europe, the Jewish quarter "Uilenburg," first building a scheme for better housing 500 families a little further out at "Transvaalbuurt." The buildings of the old quarter are now being demolished and the area is to be utilized for commerce. At Milan a large amount of slum clearance work has been undertaken—in one instance the work being accomplished progressively block by block, utilizing for temporary structures existing open spaces, gardens and rear yards where the inhabitants occupy temporary lodgings until the new better ones are ready. At Venice, too, slums are being abolished and an effort made to relieve congestion in the older portion of the city by building new inexpensive homes on the Lido, a few miles down the harbor, while at Rome very extensive areas of slums have been torn away and replaced by modern apartment houses four and five stories high, grouped about more or less open courts. Complaint has been made that in the course of this improvement portions of the Eternal City have been rendered ugly rather than beautiful.

Of the housing and city planning projects in the devastated region of Belgium the most notable have been mentioned as at or near Ypres, Menin and Roulers. In France reconstruction at first proceeded slowly, it appeared that the government desired something definite from Germany before going further into debt. Failing any such cash advances and after the Ruhr occupation had been begun, France proceeded more rapidly with reconstruction work. We all know of the splendid effort at rebuilding the ruined city of Rheims, now being carried forward on modified plans of our American city planner, George B. Ford. While this is perhaps the most notable project in devastated France, much else has been accomplished—one very interesting example on the outskirts of Rheims, known as "Le Foyer Remois," also near St. Quentin and at Soissons.

Among the more notable recent examples of cities in England that are engaged upon genuinely comprehensive city planning schemes may be mentioned Manchester and Leeds, also both Dublin and Cork in Ireland, and such interesting smaller English towns as Torquay and Wigan. Almost none of this sort of thing is going on elsewhere in Europe, although Cologne is a brilliant exception, for there a very comprehensive city planning scheme has recently been prepared.

Regional planning in England has during the past two or three years taken rapid strides. They are perhaps further ahead in this respect than we are, although nowhere in either England or continental Europe is there anything to compare with the great plans now going on for New York and its environs.

No article on city planning influences in Europe would be complete without some reference to those of an educational character. The outstanding and earliest institution of this sort is the department of civic design of the University of Liverpool, generously endowed by Lord Leverhulme of Port Sunlight fame. At the University of London there is also an excellent school of city planning and lectures in this specialty are being given at the University of Birmingham. At Paris "L'Ecole des Hautes Etudes Urbaines" is the best of its kind on the continent, receiving generous support from the city of Paris itself. At Dresden in Saxon, there has recently been organized as a part of its "Free Academy," a division of city planning. More than this, the Royal Institute of British Architects has within the past year created a special diploma in city planning and the "Council" has worked out with great care the details of requirements to be met before granting this honor. Then, too, the educational effort of the Town Planning Institute of Great Britain has been very important, this organization having conducted numerous conferences and exhibits, while its transactions contain an immense amount of information of the greatest value.

* * * *

Good Roads Week to Be Observed

The American Road Builders' Association, one of the progenitors of the good roads movement in this country, is formulating plans for a "Good Roads Week" to be observed throughout the nation during the week of January 11, 1926. It is planned that appropriate exercises be held in the public schools by devoting attention to the effect of good roads upon the progress of the nation. All civic clubs also will be asked to have appropriate exercises for "Good Roads Week."

CHANCEL, GRACE CATHEDRAL, SAN FRANCISCO
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Stevenson House — Monterey.
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Electric Heating in the Home

By H. E. SANDOVAL

Editor's Note.—Last month Mr. M. W. Scanlon of the Westinghouse Electric and Manufacturing Company told The Architect and Engineer readers all about wiring the home for an electric range.

In this month's issue Mr. H. E. Sandoval discusses the all-electric home—the dwelling equipped not only with an electric stove but electric air and water heaters. There is a difference of opinion among architects and engineers as to the real practicability of electric hot water heaters over the long-tried automatic gas hot water heaters. Mr. Sandoval's arguments are in favor of the electric heater. He says:

THE USE of electricity for air heating and water heating is increasing rapidly and is receiving greater attention every day. It has given real satisfactory service wherever properly applied, and hundreds of users today can tell of its merits and economy. Local conditions, including climate, prevailing temperatures, rates for electricity, habits of the users, etc., have a broad influence on the application of electricity to heating. The colder winter climate of the middle west and eastern states is less favorable to the use of electric heaters than the milder climate of the Pacific Coast states with their attractive low rates for electricity, and it is not surprising, therefore, that electric heating has had its inception and has enjoyed its most rapid growth right here in California.

Electric heating in the home comes under two headings—(1) Air Heating, and (2) Water Heating, which are discussed in the order named.

Air heating by means of large convection electric heaters should not be confused with small radiant heaters which are connected to the ordinary lamp sockets. Such heaters do not heat the rooms, but provide a beam of heat over a small area, and when operating on a lighting rate often prove quite expensive.

Regardless of what type of heating plant is installed in the home, it is necessary that it be large enough to give adequate heat on the coldest day of the year. These very cold days do not occur often in California, but they prove a real test on the heating system installed. Electric heat is admirably suited to this condition, inasmuch as individual heaters are installed in each room, which are large enough to maintain a comfortable temperature on the coldest day. The heaters are much too large for the ordinary day and are therefore provided with half heat and quarter heat controls. When a room is to be heated, the heaters are turned to full heat for a few minutes until the room is up to the desired temperature and then they are turned to half heat or quarter heat, which will maintain that temperature. A heater is usually placed in the hall or at the foot of the stairway, which serves to take the chill off the entire house and maintain a moderate inside temperature. The other heaters are turned on only when the rooms are occupied.

Electric heat has many advantages. It is instantly available and will heat rapidly. On leaving the house the heat can be turned off and there is no heat wasted in the house when not needed, as in the case with a furnace. There is no combustion and hence no fumes, vapors and dirt, with the consequent tarnishing of metals and soiling of walls and woodwork. Likewise there is no danger from asphyxiation or fire. Some insurance companies give a lower rate where there are no combustion heaters installed.

To the busy housewife or family man the labor of tending a furnace takes much time, as well as being dirty and disagreeable. There

is usually a delay while the fire is being started. Fuel storage takes up valuable space and the fuel bin must be watched and replenished.

The installation cost of an electric heating system compares favorably with that of other systems, especially in new homes. Wires are run to each heating location and all flues, ducts, chimneys, etc., can be eliminated. The saving of space in the basement is sometimes an important item. Heaters usually operate at 220 volts and two No. 12 wires take care of the average heater. The main service should be large enough for the entire load. Ordinarily 1¼-inch conduit with three No. 3 wires and 100 ampere service switch is large enough for the average residence.

Portable heaters which are very light may be moved from one room to another as needed, and in this way the initial cost can be kept low.

Flush type air heaters are mounted in the walls, where they take up no room space and are out of the way. Floor type heaters are also available where heaters cannot be installed in walls, although they are not as desirable. Light, portable heaters can be moved from room to room or to various locations in a room as the furniture is shifted. Ornamental fireplace heaters are installed in mantels and heaters can be ordered in various finishes to match the furnishings.

Heaters are ordinarily placed near the outside walls of a room, although the air is circulated evenly and their location is not essential.

There is a definite size heater to meet the heating requirements for each room. Heating formulas are used by electric heating engineers and wiremen to accurately determine these capacities. In locations where the temperature does not drop below 32 degrees (Fahrenheit) an allowance of 1½ watts per cubic foot of room air space is sufficient for rough calculations. In colder climates this allowance should be increased proportionately. Any electric heating manufacturer will gladly supply specifications from plans for individual installations.

Electric water heaters of the circulation type can be attached to the regular hot water boiler. For household use these boilers come in standard sizes of 18, 24, 30, 40 gallons and larger. The heaters can be turned on and off by hand to heat water as desired, or they can be left on and will maintain a hot water supply day and night. They are equipped with thermostats, which automatically turn the current off when the tank is hot and turn on again when hot water is drawn off. Heaters are made in various sizes. The most popular size (5KW) will heat sufficient cold water for kitchen use in a few minutes and enough for a bath in from 15 to 30 minutes.

The cost of maintaining a tank of hot water is greater than if the water is heated as needed on account of the tank radiation losses and the greater use of hot water. Boilers should be thoroughly insulated to keep radiation losses to a minimum.

A special water heater can be obtained for use with a storage tank which will maintain a supply of three gallons of hot water without heating the main tank. This amount of hot water takes care of practically all hot water needs except tub baths and clothes washing and the operating cost is very low.

One kilowatt hour of electricity will heat four gallons of water approximately 100 degrees Fahrenheit, that is from 60 degrees to 160 degrees Fahrenheit.

Electric water heaters are clean and safe. There is no combustion

and hence no danger from fumes or fire. These features are particularly desirable in homes where there are children.

The power companies in California give a special rate for electric heating and cooking which averages about 2 cents per kilowatt-hour for heating. The climate is mild and the heating season short, which gives a very reasonable operating cost for electric heating. A combination rate for lighting and heating is usually available so that all electricity is measured through one meter.

All electric homes which have electric lighting, cooking, water heating, air heating and electric appliances installed, use from $150 to $350 worth of electricity in a year. Lighting, cooking, and water heating runs from $100 to $175 per year, which makes the cost of air heating $50 to $175 per year. When you figure up what you are now paying for electricity, gas, oil, coal, kindling, and ash removal, you will realize that you cannot afford to be without the convenience and comfort of an electric home for the difference in operating costs.

* * * *

"Or Equal"

BY F. R. STILL, in American Architect

MANY architects and engineers specify one or more brands of material or equipment by the "trade-mark" name, or by the name of the maker, and then follow this with "or equal." There is no such thing as absolute equality in materials or apparatus of two different makes. The use of the words "or equal" only raises a question of doubt and invites subsequent controversy, in which the architect or engineer must exercise his judgment under adverse conditions, the result of which frequently leads to embarrassment and regret. When these words appear most contractors invite bids from everybody. Naturally, the prices vary widely according to the respective values. It then becomes necessary to investigate the merits of each article carefully, to avoid being victimized if some of the other and cheaper makes are approved. This places quite a responsibility on the architect or engineer, and, as a result, the client seldom gets what he thinks he is paying for. It also places the maker of the high grade material at a disadvantage, because he is forced into competition with a cheaper grade, which he would not voluntarily attempt to compete with under other circumstances.

The best that can be said for specifying "or equal" is, as one architect said: "It is a poor attempt on the part of the specification writer to protect a client against monopoly, or else it shows that the architect himself is not sure of exactly what he wants." Often it is used as a means to smooth the ruffled feelings of some of the manufacturers who were not mentioned; again, it is done with the idea that those specified will not be tempted to "boost the price," or leave the impression that the specification writer is "sold out" to one or more of the concerns specified.

The architect or engineer is a specialist who is supposed to have all the technical knowledge required to build and equip a building to meet the requirements for which it is to be built. If the client had the technical knowledge, experience, and organization to carry on the project, then he would not call in specialists to perform the operation.

Most clients tell such professional specialists how much money they can afford to put into the building at the very beginning; they know how big it is to be, what they want to do with it, and finally decide whether

or not to go ahead with it, depending on the advice they receive from the specialists as to the possibility of the thing being done for the money available. The architect or engineer then and there must make up his mind as to the quality of material and the standard of price values to be used throughout the construction. It is unfair to the contractor, manufacturer, and to the client to specify high grade, high priced material for a job when it has already been settled that medium grade or the cheapest grade of material must be used.

It is unfair to the contractor because it wastes his time getting a lot of useless figures together.

It is unfair to the manufacturer because he has to waste his time making up figures under the deception that his bid will receive favorable consideration.

It is unfair to the client, who gains the impression from reading the specifications that he will obtain the high grade material he is familiar with under the well-known trade names appearing in the specifications. It is only when it is too late to do any good that he fully understands how far the quality and service he anticipated may depart from the standards named in the specifications when those two little words "or equal" are added.

The architect or engineer, while he may be justified in trying to cover himself from an attempt to "boost prices," because certain materials are specified, need seldom fear that such an attempt will be made by the makers of high grade materials. It is only when he has to use the cheaper grades that he has to "watch his step." High grade materials of all kinds have an established market value, and such prices are usually so well known that they are used by everybody as a comparison when cheaper grades are contemplated.

Every competent and experienced architect and engineer has well defined ideas of the respective values of the various makes of similar materials and apparatus. In addition, he knows the respective business methods and the kind of service rendered by the makers. Because he knows these things is one of the most important reasons why he is commissioned to do the work. Hence, knowing as he does which one will give his client the best value for his money, why not specify that particular make and eliminate doubt? Should it be deemed advisable to permit bids to be received on other makes, a clause like the following will cover the situation better than to add "or equal," and will also give a more distinct analysis of the respective values of the various units than could be determined when hidden away in a lump bid on the entire equipment, thus:

"The material (or apparatus) herein specified denotes the standard of quality and capacity desired. Other makes may be quoted on, but bidders must state what will be the difference in price if another make than the one specified is used."

Usually the difference in price is so small that it represents a mere fraction of one per cent on the whole contract, and when covered in this manner makes it much easier for the architect or engineer to induce his client to put in the grade or make of material he desires, even at some additional cost.

As the quality of the material, the size, the amount required, the capacity, the finish or the efficiency of every piece or part of everything going into a building must be determined some time, either before the contract is let, or during the progress of the work, it is much better to decide all such details beforehand than afterward.

Effect of Hydrated Lime in Concrete

By DUFF A. ABRAMS,
Structural Materials Research Laboratory, Lewis Institute, Chicago

THIS investigation was confined to powdered admixtures which are essentially inert in the presence of water and Portland cement, as contrasted with liquids or soluble materials. Most of the tests were made with hydrated lime, but 17 other powders were also used. The effect was studied of admixtures up to 50% of the volume of cement on the compressive and tensile strength, wear, bond and workability of concrete made with sand and pebbles and crushed limestone aggregate of different sizes and gradings, in mixes ranging from 1:2 to 1:9, and a wide range in consistencies. Seven different investigations were made, including more than 20,000 tests at ages of 3 days to 5 years.

The principal conclusions are:

In general the strength of concrete was reduced approximately in proportion to the quantity of admixture. Some exceptions are noted below.

In usual concrete mixtures, each 1% of hydrated lime (in terms of volume of cement) reduced the compressive strength 0.5%; in terms of the weight of cement the reduction was 1.2%. The reduction in strength caused by replacing cement with an equal volume of hydrated lime was about 1¾ times that caused by adding lime. High calcium and high magnesian limes produced the same effect.

The addition of 1% of the following powdered admixtures in terms of the volume of cement reduced the strength of 1:4 concrete at 28 days by the following percentages: clay brick, 0.08; clay, 0.22; whiting, 0.24; sand, 0.37; natural cement, 0.38; limestone, 0.39; lava, 0.40; fluorspar, 0.43; kaolin, 0.47; kieselguhr (celite), 0.48; tufa, 0.51; hydrated lime, 0.56; ironite, 0.60; yellow ochre, 0.68; mica, 1.10; pitch, 1.50; gypsum, 4.00. For the same conditions the addition of 1% of Portland cement increased the strength of concrete about 1%; granulated slag showed an increase of 0.12%.

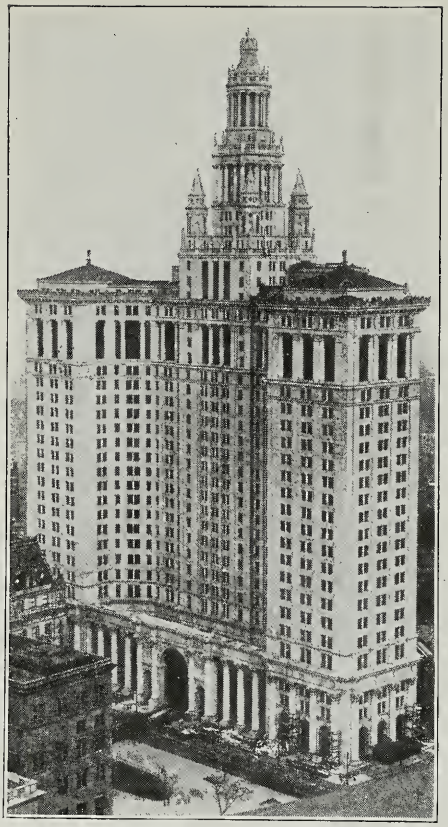
Rich concrete mixes showed a greater loss in strength due to powdered admixtures than the leaner ones. In lean mixes (1:9 to 1:6) and those in which aggregates were graded too coarse for the quantity of cement used, the strength was little affected or was slightly increased by admixtures up to 50%. The wetter mixes showed a greater loss in strength than the dry, due to the hydrated lime. The effect of admixtures was in general independent of the age of the concrete.

Hydrated lime and other powdered admixtures slightly increased the workability of the leaner mixes (1:9 and 1:6) as measured by the slump and flow tests. Ordinary mixes (1:5 and 1:4) were little affected; richer mixes (1:3 and 1:2) were made less workable. Lime and Portland cement (up to 33%) produced essentially the same effect on the "flow" of concrete.

The wear of concrete was not sensibly increased by hydrated lime or other powdered admixtures up to 20% of the volume of cement.

The bond resistance was affected in the same manner as the compressive strength by the addition of hydrated lime.

For usual concrete mixtures a reduction in strength of about 10% was produced by the use of hydrated lime in the percentages recommended by advocates of this practice.



NEW YORK MUNICIPAL BUILDING, IN THE CONSTRUCTION OF WHICH METAL LATH OF "ARMCO" INGOT IRON WAS USED

Defeating the Fire Demon With Metal Lath

By W. B. TURNER

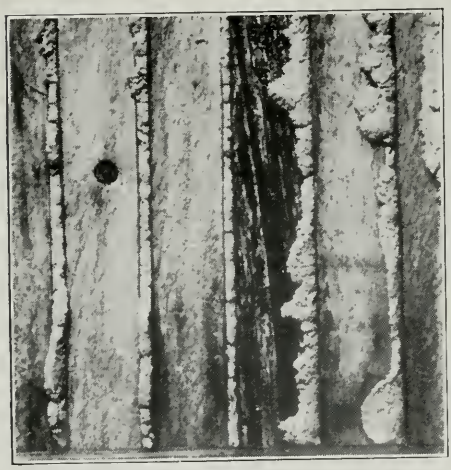
The General Fireproofing Building Materials

A COMPARATIVELY new art based on economics and public safety has been created in American architecture. It is called fireproofing and it is classified rightly as an art because in utilizing it, the builder-artisan makes it embrace beauty, endurance and strength.

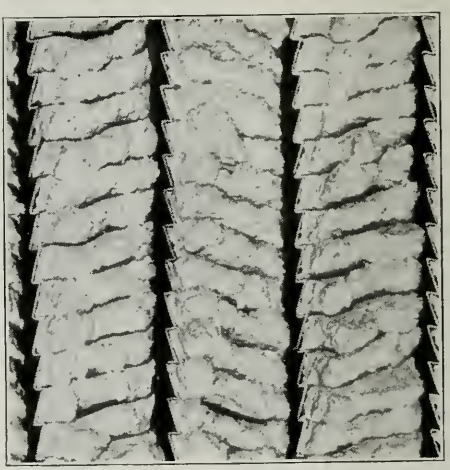
When buildings were erected merely as a shelter for a few persons, fireproofing was not regarded as essential as a construction factor. But with quantity production of iron and steel and the consequent enormous increase in commerce, industry and great centralization in offices and homes, the problem of fire protection became acute. A cigaret carelessly dropped in a waste basket might, and did, turn great buildings into monster torches. Then men turned to iron and steel and with them solved the defects in those things they had created from it.

There are few cities of importance in the world that have not been taught the lesson that is written by fire. London, Paris, Moscow and others, in their beginning, are among them. All, at some time or other, were destroyed, or nearly destroyed, because their builders failed to provide fire protection. Nero might have been an obscure figure in history if the modern art of fireproofing had been known to Roman architects.

HOUSE COVERED WITH HERRINGBONE METAL LATH, READY FOR PLASTER



A TYPICAL EXAMPLE OF WOOD LATH CONSTRUCTION. NO PROTECTION AGAINST FIRE



CONTRAST THIS FIREPROOF METAL LATH WALL WITH PICTURE AT THE LEFT

THE SAME HOUSE ILLUSTRATED ABOVE WITH PLASTER COAT FINISHED

New York, in its days of rambling frame houses, went through the terror. So did Chicago, though it might not have been by the grace of Mrs. O'Leary's cow. And by the same fate San Francisco is now a city of fire-resisting iron, steel and stone. Tokio, with its millions of flimsy though romantic dwellings and narrow streets, endangered Japan's place as a fourth world power when it burned recently.

While this destructive demon that makes no exception of women and children was striking these mighty blows, his torch did not spare many smaller, if not less famous, places. Scarcely two years ago, row after row of pretty summer bungalows on Long Island were swept away, and, only recently, beautiful Berkeley, one of the finest residential suburbs of San Francisco, was all but wiped out.

As in other great movements, solution of the problem as well as the approach to the ideal, was slow. Compositions of stone, steel and iron went through the evolutions that are common knowledge to the contractor and workman. Part of them were fireproof, but not sound-proof, and many of them did not serve for a city beautiful.

Today there are six types of home construction in more or less common use. These are stone, tile, brick, frame, concrete and stucco. Stone was one of the first types of building materials. Expense of transportation deducted from its popularity in regions away from its immediate source. Solid stone walls plastered direct are apt to "sweat", making interiors damp and gloomy. Sometimes this can be overcome by leaving air space between the plaster and wall.

Brick is popular for large office or factory buildings because of its strength, endurance and, when properly reinforced against hazard, makes the building practically fireproof. Its first cost, however, makes it prohibitive in many homes. Concrete is popular in some regions, its tendency to create water seepage, being easily overcome if handled properly with efficient workmanship. The frame building has until recently been less expensive than any of these three types mentioned, and that is undoubtedly the reason for its popularity. By "less expensive" it is meant that the first cost is less. When decay, upkeep and fire menace are considered the cost is not so small. Records show that the first fifteen minutes after fire breaks out determine the fate of the building. If materials are such that resist flames the firemen, who are allowed an average of fifteen minutes to get to the scene, have a chance to keep the damage at the minimum.

An ordinary frame building once ignited becomes a torch, destroying itself as well as endangering surrounding dwellings. Some cities that have learned the lesson of fire prevention prohibit all-wood houses.

All these types of construction have served, however, as an approach that has led to a nearer one to the ideal—the stucco home. Stucco construction is growing more and more in popularity because of its medium cost, beauty of finish in the protected wood frame construction and low maintenance expense. Properly erected, it combines economy, durability, gracefulness and safety.

Stucco buildings were created and made possible in their present day types by the perfection of metal lath. On both inside and outside walls the lath is placed on wooden studs. Inside, the plastering goes on the metal, while outside, cement stucco is put on in artistic ways, similarly, in principle, to the plastering inside. Thus wooden lath has become obsolete.

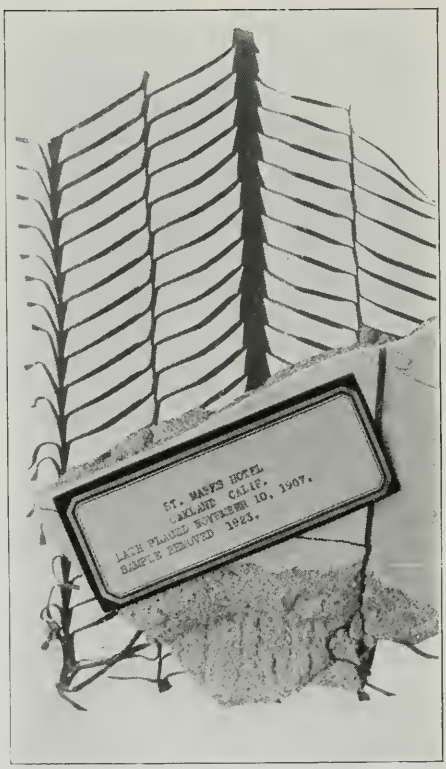
The use of metal lath, in fireproofing for beauty and endurance, is not confined to homes, however. It is successfully used in the walls of the world's largest buildings, including the Woolworth and Municipal

buildings of New York. The imposing "Pennsylvania Terminal" of New York is also fireproofed with metal lath as is the beautiful Beverley Hills hotel, Los Angeles, and the Copeley Plaza hotel, Boston.

In apartment buildings, especially, does it perform a mission of safety and strength. Here where hundreds, sometimes thousands, of persons are living under the same roof, the menace of fire, if not properly guarded, is ever present.

Just how much fire protection is afforded by plastered walls and ceilings on metal lath supported by wooden framing was a subject of considerable discussion when the lath was first introduced.

This, however, was settled in a series of tests conducted by the Underwriters Laboratories, as the result of which such construction was given a one-hour rating. This means that the Underwriters Laboratories found that it will take more than one hour for the flames to eat through a partition protected by metal lath and gypsum plaster.



SPECIMEN OF LATH MADE OF ARMCO INGOT IRON, REMOVED FROM WALL OF ST. MARKS HOTEL, OAKLAND. NO EVIDENCE OF CORROSION AFTER SIXTEEN YEARS

California Needs a Uniform Building Code

By ROBERT GREIG,
Director of Housing, California Commission of Immigration and Housing

THE State of California through its Commission of Immigration and Housing has been busy during the last few years correcting, or having the local officials correct, violations of the State Housing Act in existing buildings. This refers to apartments, hotels and lodging houses erected prior to the passage of the State Housing Act. Where we had the support of Building Inspectors, Health Officials and City Councils, the work has been comparatively easy. In instances where this co-operation was not given, the work was somewhat more difficult. It required an educational campaign in order to convince some of the City Councils that it is a good thing for their city to conform to the law in all respects.

The largest part of the expense of making existing buildings comply with the law has been to give inside rooms direct ventilation to the outer air. This has necessitated the putting in of courts, light shafts and sky-lights, which in many cases was done only by expensive alterations and even in some instances the wrecking of the buildings. There have been from 1500 to 2000 inside or poorly ventilated rooms remodeled to conform with the law since this Act went into effect.

In addition to this a great many of these buildings had inadequate toilet, bath and shower facilities, and many of those in existence were unsanitary and in a bad state of repair. These conditions have been eliminated by persistent inspection work by the regular inspectors of the Commission. Also much of the credit for this improved housing condition must go to the local inspectors.

The Commission of Immigration and Housing of California is empowered and given authority to enforce only the provisions of the State Housing Act which do not pertain to the actual erection, construction, reconstruction, moving, alteration or arrangement of apartment houses, hotels and dwellings in all incorporated cities and towns. My experience has been that outside of the larger cities and towns which have regularly organized building departments, very little is known of the State Housing Act. While it may be true that there are some violations of the State Housing Act in cities where they have a good building department, as a rule the interpretation of the State Law is generally the same among building inspectors throughout the state.

Many of the smaller cities and towns have no regular building inspectors as we understand the term, but most of them have a local building ordinance, as they call it, which in most instances has only to do with a fire district or fire limits. The official that enforces the ordinance or ordinances may be an official who is not familiar with building construction, so that in reality there is little real enforcement of either state or local laws governing the erection of buildings. As these towns grow they acquire regular building departments, and then it takes years to get rid of a lot of inferior and poorly constructed buildings, which work carries with it a lot of grief for the building inspectors.

In making surveys of existing buildings in incorporated cities and towns the Commission has consulted with the local officials as to the extent to which they were enforcing the State Law regarding new construction. In this work we have discovered a number of infractions of the law, which were committed through lack of familiarity with the State Housing Act.

The Commission has done much work in encouraging some of the cities to adopt a more up-to-date building code, but there is considerable

work yet to be done in this direction. The existing building problem will eventually be eliminated by the wrecking and removal of many old buildings to make way for more up-to-date structures. It is hoped that a building code can be devised that can be applied to all incorporated cities and towns throughout the state.

At the annual meeting of the Pacific Coast building officials, held in the city of Oakland, the key note among the building inspectors was for a uniform building code. The matter was also discussed at a meeting in the city of San Diego, 1923.

A building code is primarily written and enforced for the dual purpose of protecting human life and the prevention of fire, as its title indicates a code of laws dealing with the methods to be employed in the construction of buildings, materials to be used, and processes. As previously mentioned, every city of any size has a building ordinance of some kind and in those places where there is no building code, it is natural to concentrate effort to secure one.

The result is in every city we have a different building code. In the main they look the same but they are not. When a city starts to prepare a building code suitable to its needs a committee is generally appointed which may consist of an architect, builder, engineer, realtor or some other business man, along with the Fire Chief, Building Inspector and City Attorney, to draft a building code. They start out by getting copies of what other cities have in building ordinances, so that when the ordinance is prepared it is more or less copied after some Oregon or any other Pacific Coast city.

The provisions which relate to the different classes of buildings are jumbled together; they may divide buildings into eight or ten classes. Another city would only have four or five. There is no good reason why a code used by Los Angeles could not be used in San Francisco, Oakland, Portland, Oregon, or any other city on the Pacific Coast.

There is no good reason why floor loads, thickness of walls, working stresses and weight of materials, working stresses for timber columns, for iron and steel, for concrete, plain and reinforced, together with the amount of reinforcing steel to go into any column or wall, should not be the same in any city. A uniform code should have the minimum requirements and should be elastic enough that it would not be hard to change a section or add one to fit local conditions. A uniform building code would eliminate a good deal of the controversy that is continually taking place with building inspectors, architects and builders, over the meaning and interpretation of individual codes.

* * * *

The Designer and the "Practical Man"

THE habit of regarding the architectural designer as a man who is not practical and of looking upon the "practical man" as one who has little or no appreciation of design is bad, though it agrees with the facts in far too many cases. This habit is bad because it tends to one-sided development, through sharply dividing the men in architectural offices into the two classes that a well known architect used to call "the long haired department" and "the short haired department."

Specialization is necessary but it should not be carried to such a point in any man engaged in architectural work as to leave him without a well-rounded knowledge of all sides of practice and without well balanced development. It is natural and easy to keep a man at the kind of work he does best, but it does not develop the man symmetrically—this is not good for the man or the profession.

Granted, that an attempt to make all architectural men equally proficient in all branches of the work would be unwise and futile, that each man should be developed in the direction of the greatest aptitude, the fact remains that each man should have an intelligent grasp of the main facts concerning all branches of the work outside of his own specialty. With such knowledge he is able to co-operate intelligently with his colleagues, and his work is the more interesting to him because he is able to see it in relation to the whole. A man with such an understanding of architectural work is a more capable employee than the man who has specialized without having sufficient preliminary experience—he is a better man for the architect who employs him, also he is by far a better man when he enters upon architectural practice for himself.

The fact must not be lost sight of that a man who is a good designer is a practical man in the sense that he knows how the things he draws will build—there may be innumerable practical things that he does not know and that some other man in the organization does know, but the good designer knows enough of the practical side so that his designs will be free from any serious practical faults, and he is very likely to know enough of the practical side to be able to appreciate the value of the knowledge of the man who has specialized on the practical side.

The able "practical man", for his part, is a man who can appreciate the intention of the designer and help carry out that intention sympathetically, for the designer's work may very easily be spoiled in execution if it is not carried out with an appreciation of its character. The specification writer and the man on the job have more to do with the success of a building from the aesthetic standpoint than many people realize.

Often it is not until a man hangs out his own shingle as an architect that he becomes fully conscious of the desirability of a wide knowledge. Of course if he is able to start with a full organization, including men who have specialized in the different parts of the work, he may not experience any difficulty. But usually when a man enters practice for himself he finds that he has to take hold of sides of the work that he has had little to do with in his years of employment as a draftsman, then he has to get down and qualify.

Unfortunately, some men in the profession are never able or fully willing to overcome the handicap of one-sided development, and it is these men who give some basis of fact to the popular idea that an architect is either a builder who draws plans or a dreamer who makes attractive pictures of things that are troublesome and costly to build and inconvenient. Though these men are very much in the minority there should be even fewer of them, for the benefit of the profession. There will be fewer of them if the habit of distinguishing sharply between the designer and the "practical man" is discouraged and if specialization without a sufficiently broad preliminary experience is avoided. In this way the architect will have a higher percentage of able employees and the men who enter upon the practice of architecture will find themselves well equipped.

Living architecture, the architecture that is anything more than an exercise in archaeology, must be practical, it must express the needs, the methods of building, the life of its day. Since this is true, the architect, the intelligent draftsman and the student of architecture need to be always alert for practical information. To such men the study of human requirements in relation to architecture as a fascinating pursuit, the behavior of people in public places and in private homes takes on new interest when viewed from this standpoint, the announcement of an

improvement in plumbing fixtures, heating or lighting equipment or in building construction methods or materials is keenly interesting, not in spite of the fact but, because of the fact that they are designers.—Pencil Points.

* * * *

Public Not Receptive to Architectural Criticism

HAVING stated our belief that architecture here in America is in a way to develop into a live art, we are asked if it would not help in the development if the newspapers were to add an architectural critic to their staff. And our answer to this question is that we can think of nothing that would be more unfortunate. There are critics for the paintings and the sculpture now. And reading what they write, a man from Mars might well exclaim, "No wonder there is no art comes out of that land!" For art is not something artists make; art is something people enjoy. Reading the art critics, however, a man gets the notion that art is something on which to exercise judgment; he comes to think that a picture is a sort of problem; is it a good picture or a bad picture?—those who know the most about the history of art and the mechanics of drawing and coloring will be able to give the right answer! Modern industry may be able to make use of architecture in the course of its prodigious growth; an experiment here and there lately has suggested that architecture might be developed as an aid in advertising. But a building will advertise radiators or soap only if it interests the people who go to and fro on the streets, only if it stirs some feeling in them, only if it makes some impression upon them. Let loose a flock of critics, who know all about the Five Orders of Architecture, to discuss whether the radiator building is pure or the soap works authentic, and the man in the street will very soon shrink back from the spontaneous pleasure which persuaded the company to employ a good architect; he will very shortly cease to express opinions about new buildings to his neighbor for fear of making some mistake as to what is good and what is not good; he will tell himself he has no business with fine buildings—that is architecture, he will say to himself—what do I know about architecture? And with that, the reason for having architecture melts away!

As pleasure-giving forms, buildings have a natural advantage which pictures and sonatas lack. They are, so to speak, embedded in men's daily life. A man takes a holiday for visiting the art gallery; he must set by a special afternoon or evening to hear the concert. Architecture, however, is there on his way to work, on his way to his luncheon, on his way home in the evening. He sees it again and again, under light skies and dark, in clear air and in mist; without any special effort he can accumulate in a year a thousand glancefuls; the sum of his enjoyment is a good-sized sum. In a year he has not accumulated a thousand glancefuls of the picture in the museum because he cannot go to the museum every day. Well, he will take a whole morning at the museum then; he will look for a whole hour at the picture; he will take his thousand glancefuls all at once. Will he, indeed? He will do nothing of the sort, and this because he cannot. It is physically impossible to see a picture for more than a few moments at a time; after a few moments, receptivity crumbles; after a few moments, a man must begin either to think, or to attend to this and that detail of the picture, or to observe the manner of its painting—no longer than a few moments can he enjoy the picture itself, the art itself. You will see visitors to art galleries stand a moment or two before one of the world's masterpieces,

stare, and move on. But do not curl your lip at the gallary-walkers. They are more clear-headed than you; they know more than you do; they know one of the fundamental facts regarding the aesthetic experience; they know that this pleasure which comes in through the eye is a swift flash, not a long enduring state; they know that the aesthetic ability to take in this which the painter offers is soon overborne as by a fatigue. The ear seems to have a stouter endurance than the eye, yet no normal being can bolt four symphonies at a sitting. Plenty of concert-goers make themselves think they can and do, but the candid testify it is not done; these say that the power to receive what the music has to give sinks down after a little, rests, wells up again, and then diminishes, so that the concert is not a steady stream of full enjoyment, it is a series of peaks separated by pretty nearly dead levels. Opera is popular with the honest, clear-headed folk just because it recognizes this important fact in the aesthetic pleasure, and endeavors to fill in those dead levels with appeals to the eye, to the sentiment, to the mind—the effort is reasonable enough, though the result seems to some a good deal like those mongrel statues which the rich post-Grecian civilization thought so beautiful, part wood, part marble, real jewels for eyes, hair of gold, and a real silk cloak hung about the shoulders. But architecture has no difficulty in this sort to overcome; it needs no resort to what De Morgan's Mr. Capstick called his Complicated Mixture. Architecture is almost perfectly circumstanced for the spectator's appreciation.—The Villager, New York.

* * * *

Fine Ground Cement Makes Strong Concrete

New light on how fine-grinding of cement makes concrete stronger is given by a ten-year research just completed at the Bureau of Standards, Department of Commerce. Experiments prove that fine-grinding makes concrete stronger, especially if greater amounts of cement are used with the sand and gravel. The same increase may be obtained as economically through the use of more cement.

The research is part of a larger program of bureau research on useful properties of materials and how they may be enhanced. That fineness is a vital characteristic of Portland cement has long been known, but data were lacking as to the exact effect of such fineness on Portland cement over long periods of time. These data are now available.

Ten years ago test cylinders of concrete were made up of five brands of cement and Potomac river sand and gravel. These were first kept in moist air 28 days, then exposed to Washington weather for periods up to 10 years. Specimens broken after six months, and one, two, three, five and ten years showed greater strength compared with similar specimens made of normal cement. The older specimens showed less increase, but the result is conclusive; fine grinding of the cement increases the strength of the concrete, especially with rich mixes.

As the industry grew, the fineness has increased until at present under the national specification or quality standard 78 per cent passes through a standard cement sieve having 40,000 openings per square inch.

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THE services, expert advice and suggestions of a capable, experienced architect are being found by the thinking public to have substantial value.

ALLIED ARCHITECTS' ASSOCIATION

An organization that is accomplishing splendid results in the architectural field is the Allied Architects' Association, composed of 70 practicing architects of Southern California. Organized in July, 1921, for the purpose of rendering cooperative service by designing public buildings, the Association already has done much for the advancement of the art of architecture in the large section which it serves.

Under its charter, the Association is precluded from accepting any work of a private nature. When it undertakes the designing of a public building, viaduct, or other structure, a carefully prepared program, setting forth the requirements for that particular work, is sent to each of the 70 members, with a request that each member submit his solution of the particular problem in hand. From these solutions the best designs are selected, after frank and constructive criticism in open meeting. A final design, based on these best individual studies, is then prepared by a competent Jury of Design, appointed by the Board of Directors.

The Association maintains complete drafting rooms, occupying an entire floor of a large office building, where full plans and specifications for the various structures are prepared. Since the Association was formed, it has prepared plans for the exterior of the $6,000,000 Hall of Justice; complete plans for the $9,000,000 Museum of Science, History and Art; plans for Patriotic Hall, an $800,000 monument to war veterans; plans for the $5,000,000 addition to the Los Angeles General hospital; plans for new community clubhouses in the city's recreation centers, and many other public improvements. Among the most important projects undertaken by the Association was the preparation of complete plans for the Los Angeles city and county administration center. These plans, prepared as a community service for the nominal fee of $1, occupied the Association's time for 11 months, and cost the members the sum of $45,000. They were prepared in close cooperation with the Los Angeles Traffic Commission, the Board of Public Utilities, the City Planning Commission, and other public bodies.

Fees derived from public work, after the actual expenses of preparing the plans are met, are devoted to the service of the community. Among the services performed by the Association are the establishment of a fine arts and architectural library for public use; supervision of the course in

architecture given by the University of Southern California, without cost to the university, and direction of the architectural studies and classes of the draftsmen's societies and atelier, comprising classes of about 40 draftsmen. The Association is planning to establish at an early date traveling scholarships for architectural students who show unusual merit, and it is acting in an advisory capacity to the vocational board of the Los Angeles city school district.

Similar organizations, with the same ideals and objects, have since been formed in other cities, notably Columbus, Ohio; Washington, D. C.; Milwaukee, Wis., and Denver, Colo.

BUILD THEM FIREPROOF

With the annual observance of "Fire Prevention Week" close at hand and memories of recent disasters, both fire and earthquake, still fresh in one's mind, it is well to think seriously about better building construction. Recent disasters have again demonstrated the superior qualities of structural and reinforcing steel, but the fact should not be lost sight of, that steel unprotected is as f a t a l to good construction as wood.

If the steel frame in all the structural parts of a building is properly and amply encased in brick, the right kind of tile or concrete, then it cannot be damaged by fire. So with reinforced concrete. If it is of good quality and there is enough concrete outside of the steel reinforcement to protect it from heat then that kind of structure, too, is fireproof. If the steel bars of the reinforcing are exposed or so near the surface that their protecting concrete can spall off in a fire, it is almost certain failure for that structure. And in any conflagration that part of the structure so protected is safe. But it is no guaranty to the rest of the building or the contents against fire damaging them save in that it, the frame, will not in itself carry fire from part to part as will wood framing.

Agitating further on fire prevention, Architect Fitzpatrick of Chicago writes:

Outer walls, if of good brick, are subject to the least damage of all wall materials. Certain kinds of concrete, terra cotta, sandstone, granite and limestone follow. But everything in that building can burn and all its wood doors, floors, finish and so on. Nevertheless, you have guaranteed a saving of the structural parts, say 46 per cent of the building's cost.

Now, then, if you cut off each story from the other, by enclosing stairs and elevators in fire-resisting shafts and fire doors of metal and of wire glass, you have reduced the fire possibility to the story in which it originates. Next protect windows and doors in exposed parts with metal sash and wire glass or fire-resisting shutters.

It is always a source of amazement to me that architects and engineers can do so much of all this so well and yet fall down on some one fool item or other that practically vitiates the whole thing. Building after building will have their stairs protected, but their elevators wide open, 20 stories of them. True the stairs will enable people to get out without suffocation, but why not enclose the elevators, too, and have the job that much safer?

Go a step farther and cut up your stories into several smaller units by fire walls and fire doors and you further confine a possible fire to the contents of one of those spaces, a fire easily put out. And until all goods are shipped in metal boxes, all shelving is of steel, all carpets and hangings are of asbestos and all furniture of steel you are bound to be exposed to fire originating somewhere about a building at some time, 90 per cent of cases due to negligence or ignorance or worse. And we don't expect to go about in asbestos panties for a while yet, not even the most virulent of fire-prevention cranks, so we will be apt to have fire with us for a long while to come.

If, with all these precautions, you also install a sprinkler system that works, that is properly inspected and tested, you will then have a building that is as immune from fire as it is possible to make it.

NOW IT'S SYNTHETIC LUMBER

Since the Volstead act was forced upon us we have heard a good deal about synthetic gin. Not long ago Mr. Henry Ford predicted

an invention of synthetic milk for young America. Now we are told that the National Lumber Manufacturers' Association is developing a process for the utilization of waste products from our trees, such as twigs, branches, bark, roots and sawdust, the idea being to convert this heretofore useless residue into synthetic lumber.

The process is a conversion of the waste into a plastic substance that can be moulded under extreme hydraulic pressure into different shapes from boards to rafters.

If the inventors and manufacturers can guarantee as much strength to their product as the makers of synthetic liquor there should be no hesitancy in accepting this substitute for genuine lumber. Seriously, if synthetic lumber becomes commercially practical it will help largely to conserve the world's timber supply.

CONTRACTORS AND EARTHQUAKES

A number of contractors who had construction work at Santa Barbara under way or not yet accepted will have to pocket losses sustained by the earthquake of June 29, 1925, because their contracts contained no provision absolving them from responsibility for any damage caused by seismic disturbances. It is safe to say that none of these contractors will again sign such contracts. Damage by earthquake to construction work while in progress may be a very remote possibility, and contractors may be tempted to take a chance, but it is always the unexpected that happens and contractors have enough risks to carry without assuming those which should properly be carried by the owner. Attention is called to the fact that the "standard joint committee" form of contract which is in very general use in Southern California contains an earthquake clause which is clear and succinct. It is the twelfth clause in the contract and reads as follows:

"In case said work herein provided for should, before completion, be wholly destroyed by defective soil, earthquake or other superhuman cause which the contractor could not have reasonably foreseen and provided for, then the loss occasioned thereby shall be sustained by the owner to the extent that he has paid installments thereon, or that may be due under the terms of this contract, and the loss occasioned thereby, and to be sustained by the contractor, shall be for the uncompleted portion of said work upon which he may be engaged at the time of the loss, and for which no payment is yet due under this contract." With such a clause in their contracts the Santa Barbara contractors, whose work was nearly completed, would have had to bear only a very small proportion of the loss which they now have to assume.

STACKING THE CARDS

We are all familiar with the magician who takes a pack of playing cards and smilingly asks you to accept one—"any one in the pack"—and you do so.

Only the magician knows what card you selected because he forces a card on you without you knowing it, and he does it so quickly and so skillfully that he convinces you the hand is quicker than the eye.

When the architect prepares his plans, details and specifications, he invariably has in mind using a certain make, brand or quality of material or equipment. Instead of using the material as specified the contractor sometimes substitutes material of possibly inferior quality.

For example: A Los Angeles paint concern had its material specified in sixty known instances by various architects last year. A check up of the jobs showed that in only twenty-one cases was the material used "as specified." Substitutes were used in the other instances.

(Concluded on page 121)

With the Architects

Building Reports and Personal Mention

Granted Certificates

At the regular monthly meeting of the California State Board of Architecture, Northern Division, (the first meeting held since June, 1925) the following were granted certificates to practice architecture in the state:

Mr. F. Frederic Amandes, 1609 Virginia street, Berkeley.

Mr. Anthony J. Horstmann, 1299 Arguello boulevard, San Francisco.

Mr. Herbert O. Alden, Sharon building, San Francisco.

Mr. Harry William De Haven, 437 Forum building, Sacramento.

Mrs. Gertrude Comfort Morrow, 301 Lenox avenue, Oakland.

Mr. J. Kendall Masten, 3954 Washington street, San Francisco.

Mr. John Eberson, 212 West Superior street, Chicago, Ill.

Mr. William H. H. Weatherwax, 4005 California street, San Francisco.

Addresses Architects' League

At a recent meeting of the Architects' League of Hollywood Mr. Robert B. Stacy-Judd read a report of observations made at Santa Barbara a few hours after the earthquake of June 29, 1925. The speaker offered a number of very constructive recommendations for the most effective use of various kinds of materials to resist seismic forces. His conclusions received the unanimous endorsement of the Architects' League, of which Mr. Charles Kysor is president and Mr. M. L. Barker is secretary.

Spanish Architecture

Seventy-three State street buildings demolished by the Santa Barbara earthquake of June 29 are to be rebuilt along lines of Spanish or Santa Barbara architecture, acording to Mr. Bernhard Hoffman of the city architectural board of review.

Plans for these seventy-three buildings have been approved but there are more than a hundred waiting action. So far the owners of only one State street building, the First National Bank, have chosen other than prevailing architecture.

Waikiki Beach Hotel

Plans are being prepared by Architects Warren and Wetmore of New York City for a two million dollar hotel at Waikiki Beach, Honolulu, for the Matson Navigation Company. Mr. A. Swinerton, of Lindgren-Swinerton, Inc., San Francisco, is now in Honolulu on matters pertaining to the construction of this new hostelry.

Apartment House Work

Architect C. O. Clausen, Hearst building, San Francisco, recently completed plans for a three-story brick veneer apartment house to be built on the southeast corner of 11th avenue and Lincoln way, San Francisco, for Dr. Arberry; also, plans have been finished by Mr. Clausen for an eight-apartment building at Leavenworth and Haven streets, San Francisco, and for stores and apartments on Union street, east of Fillmore, for himself and Mr. Leon Goldstein.

Hotel Plans Completed

Plans have been completed by Architect James W. Plachek of Berkeley for Richmond's New Community hotel. It will be a five story structure of concrete and brick with 75 rooms and a number of stores. The cost is estimated at $200,000. Mr. Plachek has also finished plans and awarded a contract for the erection of a $50,000 addition to the Pacific Spring Bed Company's factory in Fruitvalle.

N. W. Mohr Busy

New work in the office of Architect N. W. Mohr, 4405 20th street, San Francisco, includes a $14,000 apartment house on Castro street near 24th, for Miss J. M. Smith; alterations to apartments on Capp street; apartment building on Irving street, for Mrs. Julia Gould and a two-story residence in Forest Hill, for Mr. George Scelt.

Oakland Hotel

The new hotel which Architect Joseph L. Stewart of San Francisco is designing for the gore of 28th, Market and San Pablo avenue, Oakland, will be fourteen stories high, the top floor to contain an immense ball room and complete broadcasting station. The hotel will have approximately 40 stores and 550 rooms and will cost $1,250,000.

Berkeley Garage

Plans have been completed in the office of Frederick Whitton, 55 New Montgomery street, San Francisco, for a two-story reinforced concrete commercial garage and store building on Ashby avenue and Domingo street, Berkeley. The owner is Mr. F. G. Scoggins and the improvements are estimated to cost $40,000.

Burlingame Stores

Architects Kuhn & Edwards of San Francisco have completed plans for a $20,000 store and shop building at Burlingame for Mr. Jules Flobert.

Personal

Mr. James K. James has been reappointed city engineer at Santa Cruz, the position he previously held from 1919 to 1923.

Mr. Edward E. Haskell has been appointed city engineer of Santa Barbara, succeeding George D. Morrison, resigned.

Architects James T. Narbett and R. F. De Sanno, associated, have moved from 910 MacDonald avenue, Richmond, to Syndicate building, Tenth street, between MacDonald and Nevin avenues, Richmond.

Mr. Lionel H. Pries, architect, has moved from 1242 Francisco street, San Francisco, to 10 McKay building, Santa Barbara.

Mr. Clarkson Swain, architect of Stockton, has returned to San Francisco, residing at 57 Sixth avenue.

Mr. Max E. Cook, architect of Los Angeles, has returned to San Francisco and is located at 24 California street.

Mr. C. Hugh Kirk, architect, has moved to 1804 Ivan avenue, Los Angeles.

Architect S. Charles Lee announces the removal of his office from 329 Douglas building to 530-31 Petroleum Securities building, Los Angeles.

Mr. Anson Boyd has been appointed to have charge of the architectural department of the Los Angeles board of education. Mr. Boyd was with Meyer & Holler for three yeras previous to accepting the position and comes originally from New York City.

Mr. R. V. Orbison, former city engineer of Pasadena, has been appointed city manager.

Dissolution of Partnership

Messrs. Irving F. Morrow and William I. Garren announce the dissolution of the partnership of Morrow & Garren, architects.

Mr. Morrow and Gertrude Comfort Morrow will practice the profession as Morrow & Morrow, architects, 1605 de Young building, San Francisco, and 301 Lenox avenue, Oakland.

Mr. Garren will conduct business as William I. Garren, architect, 1606 de Young building, San Francisco, and 27 King avenue, Piedmont.

Berkeley Architects Move.

Architects B. Reed Hardman and J. L. McCreery have moved to the fifth floor of the Berkeley Bank building, Berkeley. They have recently completed plans for several large buildings, including a sorority house for the Beta Phi Alpha on Prospect avenue, adjoining the University stadium, and which will cost $50,000; a $40,000 garage on Ashby, near College avenue for Fred Koerber, and two large residences for J. Harry Smith near Indian Rock avenue.

More Certificates to Practice

The following applicants were granted architect's certificates by the California State Board of Architecture, Southern Division, at their meeting August 25: Henry Carlton Newton, 303 San Fernando building; John P. Pedersen, 1012 Longwood street; Royal Dana, 921 Van Nuys building, and Frank H. Chantrill, 6030 Hollywood building, all of Los Angeles, and Charles Hay, 1859 Myrtle avenue, Long Beach.

Architectural Club Officers

At a recent meeting, a treasurer and two directors were elected by the San Francisco Architectural Club. Officers of the club now are as follows:

President, Carl R. Schmidts; vice president, Ernest E. Weihe; secretary, Theo. G. Ruegg; treasurer, Ira Springer; directors, Lawrence H. Keyser, Harry Langley, Lawrence C. Stier.

Residence Work

Architect Albert Farr of San Francisco has completed plans for a large residence of brick veneer to be erected on Dolores street, near 14th street, San Francisco, for Dr. C. Masorero. Estimated cost is $20,000. Mr. Farr has also completed plans for alterations to the residence of Mr. W. W. Chapin, Washington street, near Octavia, San Francisco.

Myron Hunt Busy

New work in the office of Architect Myron Hunt, Los Angeles, includes a $300,000 hollow-tile building at Altadena, for the Boys' and Girls' Aid Society and plans for rebuilding the San Marcos building at Santa Barbara, at an estimated cost of $400,000.

Designing Santa Barbara Building

Architect B. G. McDougall of San Francisco is preparing plans for a two-story Class C brick store and office building for Messrs. Shepherd and Robertson, at Cabrillo and Anacapa streets, Santa Barbara. The building will be 98x200, Spanish design and will cost $100,000.

Architect To Move

Architect Alfred I. Coffey will move from the Humboldt Bank building, to the Phelan building, San Francisco, and will occupy connecting offices with Architects Gottschalk & Rist.

Oroville Theatre

Architect Arthur H. Lamb of Sacramento is preparing plans for a Class A moving picture theatre, to cost $150,000, for the T. & D. Jr. Circuit in Oroville.

$300,000 School Addition

Architects Noerenberg & Johnson of Los Angeles are preparing plans for a $300,000 reinforced concrete addition to the part-time high school, Los Angeles.

San Jose Architects Busy

San Jose is just now enjoying a great deal of building activity, all of the architects there reporting much work on hand.

In the office of Chas. McKenzie, plans have been completed for an addition to the Anderson-Barngrover factory, cost $25,000; plans have been completed for a two-story frame building to contain a large residence, store, and four flats at 10th and Julian streets, for S. Saso; plans have also been completed and contracts awarded for a $12,000 residence in Saratoga for Mr. Louis Mendelssohn and for a $9,000 English type cottage in Saratoga for Mr. E. S. Baumann.

Architects Wolff & Higgins have moved from the Auzerais building to 19 North Second street, where they have large well-lighted offices. This firm has close to $100,000 worth of work on the boards, including the following:

One-story country house, Spanish type, Kiefer road near Santa Clara, for Mr. Walter Brown. Estimated cost $20,000.

One and one-half-story frame and rustic residence, Neglee Park, San Jose, for Mr. H. E. Grey. Estimated cost $6500.

Two-story frame and stucco residence at Morgan Hill, for Mr. L. F. Liston of the Farmers' and Merchants' store of that town. This house will be electrically equipped throughout, including heating, hot water, stove, etc. It will also be equipped with Peerless built-in fixtures.

Two-story Colonial house, San Jose, for Mr. Geo. Friend. Estimated cost $12,000.

Two-story Colonial type residence with hot air heating at Los Gatos for Mr. D. J. Dwyer, cost $7500.

Two-story residence in Palo Alto for Mr. Geo. W. Parkinson. Estimated cost $8500.

One-story residence, San Mateo, for Mr. B. McSweeney.

Two-story English type residence, College Park, to replace house recently destroyed by fire, for Mr. Geo. E. Hulse. Estimated cost is $6500.

In New Offices

Carlos R. Sedgley, architect of Los Angeles, California, announces that he has moved his office from 1547 N. Western avenue to suite 1103 Kerckhoff building, which suite has heretofore been occupied by Frederick J. Soper, architect.

Messrs. Sedgley and Soper will continue to carry on their work both separately and as associates at the latter address.

Designing Flat Building

Architect A. H. Knoll, Hearst building, San Francisco, is preparing plans for a two-story and basement, brick veneer and stucco flat building to be erected on the southwest corner of Fulton street and 34th avenue, San Francisco, at a cost of $60,000.

Long Beach Hotel

Architects Walker and Eisen of Los Angeles have completed plans for a twelve-story Class A store and hotel at Long Beach for Mr. Fred B. Dunn. Estimated cost $2,000,000.

COMPETITIONS

For Small House

McCall's Magazine announces a competition for a small house (cubage 18,000 cubic feet). The author of the design placed first will receive a cash prize of $1,000. The second prize will be $500. The jury of award will also select a few designs which may be considered worthy of honorable mention.

The competition closes October 31 1925.

Drawings are to be delivered to Miss Marcia Mead, consulting architect to McCall's Magazine, 236 West Thirty-seventh street, New York, N. Y., from whom programs may be procured.

All architects and draftsmen of the United States are invited to participate in this competition.

Elks Building Competition

The Santa Barbara Elks lodge will invite architects to compete in preparation of designs for a new clubhouse to replace the old building at Estado and Figueroa streets. It will be Class A construction and from three to five stories high.

Branch Bank Building

Architect Oscar Mohr, 310 California street, San Francisco, has completed plans for a one-story reinforced concrete branch bank building, at Third and Quesada streets, San Francisco, for the Bank of Italy. Mr. Mohr is also working on drawings for a large apartment house in the Western Addition, to cost $125,000.

To Build Claremont Home

Architect W. C. Ambrose, with John Reid, Jr., school architect of San Francisco, will build an English type residence for himself on Brookside avenue, Claremont, Berkeley.

Designing Oakland Hospital

Architects Reed and Corlett of Oakland are preparing plans for the new Hillcrest Hospital, to be built on Orchard street, Oakland, at an estimated cost of $500,000.

Brick Residence

Mr. H. N. Larsen has had plans prepared by Architect Thomas Kent of San Francisco for a one-story brick veneer home on El Verno way, San Francisco. Estimated cost $12,000.

Architect's Father Dies

Rev. W. H. Ratcliff, father of Architect W. H. Ratcliff, Jr., Berkeley, died at his home in the College City, the latter part of August. Rev. Ratcliff had been retired from the ministry for some time.

Is There a Cure for Jazz?

With jazz in our churches, jazz in our colleges and universities, jazz in the streets, in business, in society, jazz in politics, jazz in fashions—though fashion always has kept this germ alive—and jazz in the most hallowed spots of earth, one well may exclaim: "Is there, then, no cure for this malady, no antidote for this poison, no refrigerant for this fever?"

Yes, brother, there is a very simple remedy. I have named it before, but it will bear repetition many times, for it seldom is applied where it is most needed. The prescription, as far as I can learn, was written by Isaiah the prophet. It reads thus: "Study to be quiet."

It is a remedy that any one may take at any time. The simplest application of it is to stand still when almost every one else is running; to keep your hat on, or your head uncovered as you will, when everyone else is throwing theirs in the air, and your lips closed when everyone else is yelling; to sit and rest when everyone else seems to be going and tiring; to lie under a tree listening to a bird symphony while others are dancing in a close, garish room to alleged music that is a cross between a boiler shop and a saw mill. In a word, to "Study to be quiet."

Even without intelligently applied remedies, the fever of jazz will run its course, as all fevers do. True, it will leave its scars. For a long time after its general abatement we shall feel its effects as we slowly climb through convalescence to full recovery. But the growing number of those who are taking the prophet's prescription, who are studying to be quiet and making a reasonably good job of it amid all the surrounding turmoil, eventually will give us once more a healthy social body.

And then humanity, as it has done many times in the past, will take up the task of dragging civilization out of the dust of the attic, looking it over and trying to advance it another notch in the very slow process of evoluton—for things do evolve (unfold) and grow and become better no matter what efforts the fundamentalists make to inject static into the scheme of Creation, no matter how much wiser some of us seem to be than the Creator Himself.—Valve World.

Industrial Notes

W. E. Lyons, for the past five years with the Standard Oil Company as supervisor of construction at the Richmond refinery, is now with Messrs. Heath & Wendt, general contractors of Oakland and Berkeley.

Mr. James Morgan, formerly with the Mark-Lally Company, has been appointed selling representative in Southern California for the Wickwire Spencer Steel Company.

COMMUNICATIONS

Building Costs Per Cubic Foot

Editor The Architect and Engineer,
Sir:—

In answer to your inquiry as to the cost per cubic foot of buildings erected within the last year in San Francisco, the following is a tabulated report:

	Class A per cu. ft.	Class B per cu. ft.
Office buildings	.58	.54
Hotels	.62	.57
Lofts	.25	.22
Warehouses	.25	.22
Apartments	.61	.56
Apartments (Class C)	.43	
Stores, apartments above		.37

	Class B per sq. foot
Stores, 1 story	$3.00 to $5.00
Residences, average	5.25 to 8.00
Residences, speculative	3.50 to 6.00

	Class B per cu. ft.
Garages, 3 or more stories	.26
Garages, 2 stories	.23
Garages, 1 story	.18
Flats, two story and basement	.32
Corrugated iron buildings, average size	.09
High class, Class A community apartments	.65
Office buildings, special for doctors or dentists	.61

All measurements from basement floor to roof per cubic foot.

We have given these dimensions per cubic foot of buildings but it is no longer the practice to figure buildings by the cubic foot contents as we find it more practicable to make our estimates by the square foot area.

Respectfully yours,
GRACE & BERNIERI,
By John Grace.

To Good to Pass Up

Editor The Architect and Engineer,
San Francisco, Cal.
Sir:—

We enclose herewith our check for the sum of $2.50 in payment for one year's subscription to The Architect and Engineer.

Sometime ago, we wrote you cancelling, upon the present subscription, but after looking over the two last issues we feel that this office cannot afford to pass up such an instructive and well illustrated periodical.

Yours truly,
BEEZER BROTHERS,
Architects, Seattle, Wash.

Reports on Santa Barbara Earthquake

Following is a list of reports on the Santa Barbara Earthquake which have been addressed to The Architect and Engineer and are available for reference at this office:

Allied Architects Association of Los Angeles—Personal views of members with special discussion of earthquake faults in the Santa Barbara region by Bailey Willis, President of Seismological Society of America.

Common Brick Manufacturers Association, Sharon building, San Francisco. Report by Engineers H. J. Brunnier, T. Ronneberg and John G. Little.

Robert B. Stacey-Judd, 6030 Hollywood boulevard, Los Angeles, a report read before the Architects' League of Hollywood.

M. M. O'Shaughnessy, City Engineer, San Francisco. Report of personal observations and conclusions with snap-shots of damaged buildings, diagrams, etc.

Alfred Krafft of Julius E. Krafft & Son, architects and engineers, San Francisco. Personal report to American Society of Civil Engineers.

With the Engineers

Engineer Opposed to Tied-Type Column Design

MEMBERS of San Francisco section, American Society of Civil Engineers, who have visited Santa Barbara since the recent earthquake, have been asked to submit individual reports, and one of the most interesting ones has been written by Mr. Alfred J. Krafft, of J. E. Krafft & Sons, architects and engineers of San Francisco. Mr. Krafft offers the good advice that "unless our structural designs are intelligently carried out in the field we cannot expect structures to safely stand."

After careful inspection of the Santa Barbara buildings, Mr. Krafft makes the following deductions:

"There is nothing to indicate that present methods of good engineering design and construction will not suffice, but to the writer's mind one of the methods of column design permitted by the building laws of some of our large cities, namely, the tied-type with ties widely spaced, is entirely unfit as a structural member. This kind of column, as would be expected, failed, due to shear on diagonal planes as a result of direct compression, to diagonal tension as a result of bending and to splitting of the concrete as a result of vertical steel buckling. The resistance to these stresses in such columns is exceedingly small; the ties and vertical bars offering practically no resistance to the lateral movement of the part above the plane of rupture with relation to the part below.

"There should be no disagreement among well-informed engineers that for relatively tall structures a properly designed structural steel frame where provision is made for direct and bending stresses in the members and connections due to vertical and horizontal forces, is superior to any other type of construction.

"For medium height structures the reinforced concrete building properly designed for direct and bending stresses due to vertical and horizontal forces with continuous and intelligent supervision in the field, would be equally as substantial and more economical than the structural steel frame building. A combination of structural steel and reinforced concrete would, in many cases, be advisable.

"For low buildings structural steel or reinforced concrete can still be built to advantage, but masonry and timber structures of good material and construction, well anchored, tied and braced, may here be used with confidence and economy.

"With well designed structures in any materals properly used and with intelligent supervision in the field, structures can be safely and economically constructed to resist earthquakes of the severity of that felt at Santa Barbara."

The Engineer in Public Life

AN INTERESTING thought has been advanced by Mr. C. E. Grunsky, consulting engineer of San Francisco, that perhaps analysis would show that in comparison with other vocations—newspaper editors excepted — the engineer comes up to the average good citizen in giving attention to public affairs. Mr. Grunsky points out that engineers are numerically a very small fraction of our population, and that many of that profession have made an enviable record in public life.

The wonderful progress that the world has made in recent years is largely attributable to the attainments of the engineer, who has applied his skill and technical knowledge to harnessing the great forces of nature and to making them serve man. He has recovered many of the waste places of the world, and through the skillful application of his science has made it a much better place in which to live.

Because of his knowledge and skill he is unquestionably fitted for a prominent role in public affairs, for a very large number of our public problems are basically engineering problems, and the engineer in those matters which are particularly in his province should lead the way. If there be any who doubt that engineers have made substantial progress in leadership it is scarcely necessary to point to the fact that certain notables in national and international affairs are of that profession. That city managers have been largely recruited from among the ranks of the engineers is equally significant.

Mr. Grunsky says that the engineer should take a more prominent place in public affairs than he has heretofore done, and that he should be found "well in the lead." No one will question Mr. Grunsky's assertion. The engineer should take the place in public life for which his attainments and his knowledge qual-

ify him. He should do so, not because of desire for personal preferment, but because his training fits him to serve better than others in certain capacities. If those who are best fitted for service do not enroll the public suffers. But it will be necessary for the engineer to voluntarily enroll. The occasions upon which the office seeks the man in this country are infrequent. If the man best fitted for the office fails to push his claims for consideration it will go to the man, who clamorously demands it, even though his attainments and qualifications are inferior. If engineers are to win public recognition as leaders in those branches of public service in which they are best fitted to lead, they must collectively and individually demand such recognition.—Improvement Bulletin

Service Groups

The Pacific Gas & Electric Company is contemplating a comprehensive program for the construction of a number of so-called "service groups" in various localities throughout the territory served by them in the northern half of the state of California. Each group will consist in general of a warehouse, garage and shop buildings for the use of the company's operating districts and will serve as a small supply center for its local territory as a subsidiary to the company's new central warehouse and supply depot which is now under construction at Emeryville, California. The completion of the buildings will be an important step towards increasing the operating efficiency of the districts, and bettering consumer's service in the territory served. A special study of the architectural treatment of these buildings is being made in order that they will be in complete harmony with that of the neighborhood in which they are located. The location of the groups now contemplated will be as follows: Chico, Marysville, Auburn, Sacramento, Oakland, Berkeley, Martinez, San Rafael, Santa Rosa, San Francisco, Stockton, San Jose and San Mateo.

Systems of Floor Construction

Among the most economical systems of floor construction, for light loads in hotels, apartment houses and similar buildings where a flat plastered ceiling is required, are tile and concrete joist construction. One difficulty encountered is the possible discoloration of plaster at the joists where plaster is applied directly. Some types of rib construction are also recommended for hotels, using metal forms spanning joists about 3 ft. apart. Two-way joists and panel construction has also proved economical, all arrangements being governed by the building code requirements for the locality.—Concrete.

The Owner's Responsibility in Building*

IN DISCUSSING this subject I shall refer only to engineers and to work customarily designed by engineers, and shall leave out the word "architect." The same general principles should apply to work customarily designed by architects.

The more important elements that make up the construction industry are the owner; the engineer and his organization; the contractor and his organization of superintendents, engineers, accountants, etc.; the workmen, skilled and unskilled; and the group supplying materials, which also is made up of complex organization. For the purposes of construction, these groups are interdependent, and their interests are the same, since the depression or the expansion of the industry affects them all in the long run.

The owner group is the only element of the construction industry that has within its power much control over the volume and the regularity of construction. As a whole, it has control over the volume of construction and the time at which it is undertaken. The owner group includes individuals, and private and public corporations. This group is primarily responsible for the regulation of the activities of the building industry.

It has been shown conclusively that an increase in the volume of construction in any community is immediately followed by an increase in the cost of construction, both materials and labor increasing; and it must not be forgotten that about 90 per cent of materials represents labor in some form, and that a decrease in volume is followed by a decrease in cost. Wide fluctuations in cost bring reactions in turn on the volume of construction and affect the employment problem.

This condition probably is not realized clearly, and when it is appreciated by all the elements of the industry, greater stability will result. Statistics that show the facts should be of great help in this respect. In almost every walk of life, people are apt to follow each other like sheep. If one builds, another thinks that he must build.

As a general rule, the owner element may be classed as the least skilled element of the building industry, since it usually has had little contact with the details of the industry itself. It is, therefore, doubly important to make clear to this group some of the fundamental problems it affects.

The owner who undertakes a piece of engineering construction is responsible for the selection of the engineer to translate his general requirements into definite plans and specifications so that

*Address before annual meeting of the American Construction Council.

the contractor and his forces may do the construction. In selecting his engineer, the owner should give consideration to the engineer's breadth of experience, his qualifications and those of his organization for the particular type of work, his reputation for fair dealing with owners and contractors, and his ability to get his work done expeditiously. If possible, the engineer should be called in for general advice on the feasibility of the undertaking when it still is in the initial stages.

The owner or the engineer, or usually both, are responsibile for the selection of the contractor or the list of bidders. In making such selection, consideration should be given to the skill, the integrity, and the responsibility of the contractor and his organization, his experience for the particular type of work, his reputation for fair dealing, and his ability to complete his work on time.

If these precautions are followed, bidders will be selected who will be on about the same footing, and fair competition can be secured. No contractor should be asked to bid because of friendship only, or as a matter of expediency.

Owners should realize that there is considerable variation possible in the character and the cost of construction, even under the most definite plans, specifiications, and careful inspection, caused by the attitude and the ability of the contracting organization.

Owners of large experience in building place greater stress on having their work done by engineers and contractors of good reputation than do owners of less experience.

The owner should carefully study the general plans and the specifications and agree with the engineer on the general features of the work. It is important that all changes should be made on paper and as few changes as possible made after the contract has been let, as they are wasteful of time and money.

Payments should be made when due, so that the contractor may not be obliged to carry more financial responsibility than he anticipated.

The owner's responsibility does not cease with the selection of the engineer and the contractor. The results of his undertaking, if it is of more than a private nature, may be far reaching. If it be property for rental, the rents may have to be excessive if the cost is too great; or if it be a manufacturing enterprise, fixed charges may be too high; or if it be a public building, the general public must pay more taxes. Also, if he can do anything to stabilize the building industry, he will be helping the workmen and the community.

Some of the important responsibilities of the engineer have been mentioned in the foregoing statements. He should be familiar with the conditions surrounding his problems. If it is a manufacturing plant he is designing, he must familiarize himself with the manufacturing processes so as suitably to arrange the machinery and the processes for economical installation and operation, and make the structure fit them as simply as possible. He must be familiar with the physical properties of building materials, their availability and costs. In these days of large, complicated jobs involving several different branches of engineering, it is important that an engineer who is carrying on such general work should have an experienced organization qualified to cover the several branches.

The plans and the specifications of the engineer should be clear and complete and should fully describe the work to be done and all the known conditions surrounding it. There is a wide variation in the amount of service rendered in this request. Ambiguity and incompleteness in plans lead to higher construction costs and less satisfactory results. The engineer should not expect the various subcontractors to make plans that should be made by him.

Contracts should be carefully drawn and a type of contract should be selected that will be fairly applicable to the work to be done. Not all jobs may be done advantageously under a lump sum contract. When the extent of the work is not definite, or when the risks are uncertain, or if the time required will be long, the work usually can be done more advantageously under some other form of contract. In some cases, lump sum contracts should not be used.

The movement to get adopted for general use a uniform set of contract documents drawn by the several elements of the industry is a good one and deserves to succeed.

STACKING THE CARDS

(Concluded from page 114)

Such flagrant disregard of specifications, if carried to excess, is quite liable to seriously injure the reputation of the architect. The client, too, is likely to suffer. Manufacturers who advertise their products can usually be depended upon to maintain quality and price standards. If architects are influenced by this advertising (and they should be) and then the contractor substitutes inferior goods, the manufacturer is not getting a square deal; neither is the architect nor his client. Specify advertised material and equipment in fairness to everyone and follow it up by insisting that the work be done according to specifications.

The Five-Day Week "Remedy"

One commentator upon the action of the building trades that have imposed a five-day week upon industry, has explained its existence from the cupidity of those mechanics.

Here is the idea: the trades are principally those required to finish a building job. The owner is anxious to have the job done; the contractor is anxious to get his money; the architect wants to see the structure completed. With a five-day working week, and a possible sixth day conveniently in the offing — for which, being overtime—double pay, or, at best, time and half time wages are demanded, haste may be made—for a price.

Every one concerned in the business knows it is immoral, every one knows it is a hold-up, but—they pay!

When the day arrives when no overtime work will be tolerated this sort of thing will be at an end.

Who will start the innovation? Selfish interests so far have hidden the innovator from view.—Building Arts.

* * *

While much talk and some action concerning establishment of a five-day week in the construction industry is being found in all parts of the country, it is interesting to give attention to developments that came out of the campaign for a 44-hour week in the printing trades.

One of the claims made by the printers' union in connection with this campaign was that reduction of the working week from 48 hours to 44 hours would prolong the life of a printer nine years. The Employing Printers of America took great interest in this statement and made a keen study of this life-lengthening problem. The result was that the following material appeared in their bulletin:

"Work 44 hours at 48 hours pay, and gain 9 years.
"Work 40 hours at 48 hours pay, and gain 18 years.
"Work 36 hours at 48 hours pay, and gain 27 years.
"Work 32 hours at 48 hours pay, and gain 36 years.
"Work 28 hours at 48 hours pay, and gain 45 years.
"Work 24 hours at 48 hours pay, and gain 54 years.
"Work 20 hours at 48 hours pay, and gain 63 years.
"Work 16 hours at 48 hours pay, and gain 72 years.
"Work 12 hours at 48 hours pay, and gain 81 years.
"Work 8 hours at 48 hours pay, and gain 90 years.
"Work 4 hours at 48 hours pay, and gain 99 years.
"Work no hours at 48 hours pay, and live forever.

"By following out this line of reasoning, one cannot but think that the sole reason for a printer dying is that at some time in his early youth he was indiscrete enough to work.

"Of course to insure the above recipe working out satisfactorily, one must be certain that the shorter work week carries with it the pay of a 48-hour week. That is the real secret of its success."

Westinghouse Company Issues New 1925-27 Catalogue

The Westinghouse Electric and Manufacturing Company is distributing its new 1925-27 catalogue of electrical supplies. The catalogue presents a complete representation of the apparatus manufactured by the Westinghouse Company, or obtainable through its district offices or agent jobbers, and gives detailed information on electrical supplies.

The publication, which contains 1,200 pages and is profusely illustrated with 4,500 engravings, lists all new apparatus designed and manufactured in the past two years, as well as all the previous established types. Included in the new apparatus for the various industries are the following:

Architects and builders—Truck type switchboards, ornamental wall brackets, safety switches, fittings for pipe structures, steel switchboards, Sol-Lux luminaries, Junior cabinet electric range, University and Jefferson Newels, Paragon and Octagonal pendants, Solar Glow heaters.

Some interesting facts about the 1925-27 catalogue, showing the immensity of the task of publication, are that it required more than a ton of ink for printing, 10 tons of type to set up the text, 12,000 yards of cloth and 15 tons of binding to make the covers, and 4,500 engravings for the reproduction of photographs and diagrams. To paste the thumb index tabs in the notches, a feature designed to assure convenent reference, required the labor of 29 operators for 45 days, and the paper used to print the complete edition, if spread out flat, would cover an area of 25,000,000 square feet.

Passing of Berkeley Builder

Mr. H. P. Nelson, one of the best known building contractors in the East Bay section, died August 20 in a San Francisco hospital following a six months' illness. Mr. Nelson was 58 years old and resided in Berkeley for more than a quarter century. He built many prominent structures in the East Bay section. He was a member of the Oakland Scottish Rite bodies and Aahmes Temple of the Shrine.

Architectural Club Lectures

The annual Atelier Exhibition of the season's work — 1924-25, by the San Francisco Architectural Club was held in the club rooms, 77 O'Farrell street, September 15-19 and was well attended.

The club anounces a series of four illustrated lectures on the "Classic Orders," by Professors Wm. C. Hays and Warren C. Perry of the University of California.

Roof and Waterproofing Problems

Earthquake Roofs

By J. I. HOLDER,
Director of Engineering Department, the Paraffine Companies, Inc.

Editor's Note—How can we construct so-called built-up composition roofs to withstand the ordinary earthquake vibrations and shocks? This is a question with which Mr. Holder has been confronted on several occasions, and after a thorough study of the Santa Barbara disaster the following is offered:

THE roof of the building during earthquake disturbances is but one small factor in the structure as a whole, but it is enough of a factor to warrant close attention in its construction with very definite specifications strictly followed, particularly where there are so-called "earthquake areas." It is admittedly a fact that the most important part of the building from the viewpoint of withstanding earthquake shocks are the foundations, walls and floors, and upon the proper construction of these to meet such disturbances rests, to a large extent, the safety of the balance of the building. The roofs, however, should and can be made to withstand fairly severe shocks.

From all that can be learned there is no degree of certainty with which one can predict just what kind of a push or pull or lift will be exerted when Mother Earth starts her readjustment process. The roof may be subjected to an upward thrust or a sudden drop, a rolling motion with one part of the building pulling against the other in two or three different directions. There is no known motion to which the building and the roof may not possibly be subjected. The three principal weaknesses in built-up roof construction are enumerated as follows:

First: It has been very definitely determined that one of the greatest weaknesses in the so-called built-up roof where subjected to earthquake disturbances is the juncture of the parapet wall and the roof deck. The ordinary method of carrying the roofing from the roof deck up the wall is not adequate to withstand the shocks that are likely to occur. This applies to all built-up composition roofings, regardless of type or class of manufacture. At these wall and roof junctures the roofing is broken or ruptured at the angle, or it is pulled away from the wall or torn from the roof deck if fastened to the wall.

Second: Another weakness which occurs in the body of the roof is the use of felt instead of good, strong, tough roofing. Felt does not have the tensile strength of roofing and is far more susceptible to breakage than roofing.

Third: The ordinary method employed of laying the felt or roofing shingle fashion is another weakness which tends to create open breaks from the severe strains to which it is subjected. The roofing has no opportunity to meet the "cross pull" without breakage.

These conditions are easily remedied under proper and definite specifications. The following is not intended as a definite specification, but is merely an outline of method of construction, and as a guide to correct the aforementioned weaknesses:

First, and because it is the greatest weakness which must be successfully met, are the flashings. In addition to the common practice of carrying roofing up the wall and sealing it to the wall with flax felt mopped on over the upturned material it is recommended that metal base flashings be installed in the angle and that the metal base flashing be carried up the wall not less than 4 inches at the high points of the roof, and not less than 8 inches at the low points of the roof, and out on the roof deck not less than 4 inches. This flashing should be placed on top of the roofing provided there is not too much of an incline and nailed to the roof deck, spacing the nails about 3 inches apart and mopping over the nail heads a strip of 14 pound felt about 6 inches wide, having it extend from the angle of the roof deck and wall out over the metal and on the roof 2 inches beyond the edge of the metal. Twenty-four gauge galvanized iron should be used, if the best construction is desired. If the incline of the roof deck is more than 2 inches rise per foot it is advisable to place the metal base flashing between the top layer of roofing and the layer beneath, in which case it would be unncessary to felt strip the nail heads as described above.

The second precaution which must be taken is the use of good, strong, tough, durable roofing, weighing not less than 35 pounds per 100 square feet, and being of the very highest and best grade procurable. Not less than three layers of roofing should be laid. Saturated felt must never be used unless one wishes to gamble.

The third precaution is the method of

construction; that is, the laying of the roofing. There should be laid not less than three layers of 35 pound roofing, each layer laid at right angles with the other layer. To illustrate: The first layer of roofing laid with a lap of 2 inches and the laps cemented with asphalt. This layer is laid at right angles to the first the incline of the roof deck. The second layer is laid at right angles to the first or parallel with the incline of the roof deck. The sheets are lapped 2 inches and mopped solid to the underlying sheets. Such nailing as is necessary shall be done only to hold the roof in place. The third and last layer is laid at right angles to the underlying layer and at right angles to the incline of the roof deck. It is lapped 2 inches and only blind-nailed, the laps well cemented with asphalt. A flood coat of not less than 50 pounds of asphalt and a good heavy coating of gravel well embedded with a generous supply on top completes the roof. This method of construction is known as a reinforced roof, and provides a means to successfully withstand the "cross-pull." Because of the gravel surface or finish there is provided the very maximum of fire protection, fire being frequently the greatest peril which follows these disturbances.

The above method of construction is particularly applicable to the flatter inclines. On the steeper inclines it may be necessary in some cases to somewhat change the method of construction.

The writer has worked up some very definite roofing specifications to best meet earthquake conditions as a further contribution of service to all architects and engineers who may wish to avail themselves of this information.

Stood Santa Barbara Shock

Houses with walls built of Bishopric Base as a backing withstood the earthquake shock in Santa Barbara without exception, according to Mr. J. W. Ford, Jr., president of the Bishopric Manufacturing Company of Los Angeles.

"It was a noticeable fact," the reports to Mr. Ford stated, "that houses in which Bishopric Base was used stood up under the shock while neighboring structures tumbled. We checked up on this in three or four cases, and in every case the Bishopric house came through in good shape."

Sub-Contractor is Liable

Industrial accident insurance carried by a contractor does not cover men employed by a sub-contractor, it has been decided by the State Industrial Accident Commission in the case of John Kavanaugh vs. John Grau and William Childers.

Grau is a contractor who was erecting a building in Salinas, California. Childers was a sub-contractor on the plastering work and carried no insurance. Kavanaugh, a plasterer employed by Childers, stepped off a 14-foot scaffold, injuring his knee and both heels.

Painting by Installment

The Chicago Conference on the advantages of the installment plan for painting was a success and the advocates of this method of encouraging the painting of buildings deserve credit from the industry for putting over this scheme.

It will benefit not only the manufacturer, the dealer and the master painter, who will get results out of the plan, but one should consider that it will be a great and lasting boon to every city in this country, benefiting the industry in general and every community and every property owner.

As one of the speakers said, in the year 1921 there was one in four buildings painted, and why were not the other 75 per cent brightened up? There are many reasons why perhaps half of them were not painted, but there is only one reason why the other half was not done and that was because the owner could not afford to pay out at one time the amount it would cost to paint up.

The new scheme, properly handled and quickly brought to the attention of the property owners, will awaken them and give them some encouragement to have their work done without any large increased cost. It should be just as easy for the property owner to pay for painting his home in installments as it is easy for him to purchase an automobile or piano on the same plan.

Installment Plan Helps Painters

A Los Angeles painting contractor, John E. Smith, writes to headquarters of the "Save the Surface Campaign" that the installment plan for painting has benefited his business 100 per cent. He believes it is a great help for two reasons: "First, the overnight painter will not have so much chance to beat the property owner. Second, the property owner can save his home from decay by making monthly payments and not be so hard pushed for money when it can be used in other ways."

Trade Literature

Elevator Supplies Company, Inc., Hoboken, N. J.—Catalogue No. 20 describes and illustrates E. S. Elevater Door Closers and Positive Electric Interlocks. Is attractively arranged and printed with folios of standard size.

Murphy Varnish Company, Newark, N. J., Chicago and San Francisco—Brochure giving Eight Architectural Periods and Their Modern Adaptations, together with a chapter on the Spanish style; includes a brief exposition of some of the principal periods of interior decoration adapted to modern usage, with specifications for the finish of woodwork and fixed decorations.

Frigidaire, an electric refrigeration for residences and apartment houses. Shows the possibilities for providing a new modern convenience for the apartment house dweller. Profusely illustrated, showing many prominent buildings equipped with Frigidaire cabinets. Specifications are given. Delco-Light Company, Dayton, Ohio.

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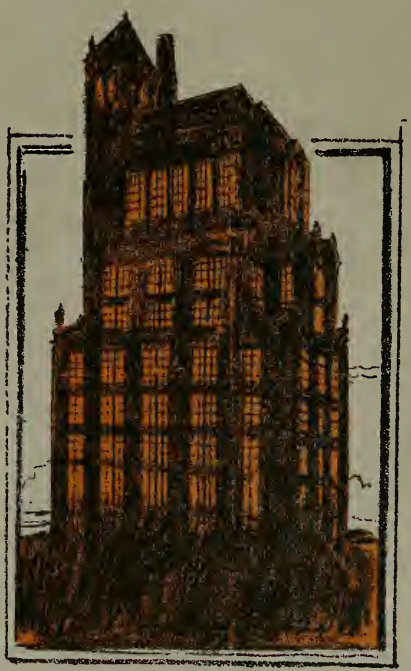

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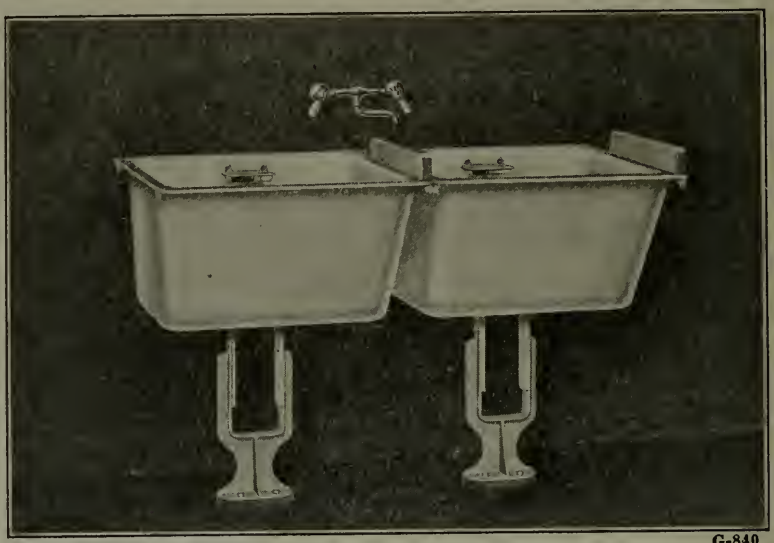

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Contents

VOL. LXXXIII OCTOBER, 1925 Number 1

COVER PICTURE—ELKS CLUB BUILDING, SACRAMENTO - *Frontispiece*
Hemmings & Starks,
Architects

TOWER, ELKS CLUB BUILDING, SACRAMENTO - - - - - - 50

RECENT WORK OF LEONARD F. STARKS & CO., SACRAMENTO - - 51
Federick Hamilton
Twenty-five Pages of Plates and Plans

LABOR CONDITIONS AFFECTING BUILDING CONSTRUCTION - - - 76

THE HOUSE BETWEEN - - - - - - - - - - - 79
Violet W. Dunham
Nine Plates

A CONCRETE COTTAGE DESIGNED TO WITHSTAND EARTHQUAKES - 86
Frederick Rings, C. E.

MR. POLK'S LAST WORK - - - - - - - - - - - 88

ITALIAN RENAISSANCE FOUNTAINS - - - - - - - - - 91
Ten Plates

WOMAN ARCHITECT SPEAKS HER MIND - - - - - - - 99
Alice Walton

EARTHQUAKE RESISTING FOUNDATIONS - - - - - - - - 102
G. Siacci, C. E.
Edw. Glass,
Architect

COLOR IN ITS RELATION TO ARCHITECTURE - - - - - - - 105

LOS ANGELES' NEW CITY HALL - - - - - - - - - 107

EDITORIAL - - - - - - - - - - - - - - 108

WITH THE ARCHITECTS - - - - - - - - - - - 111

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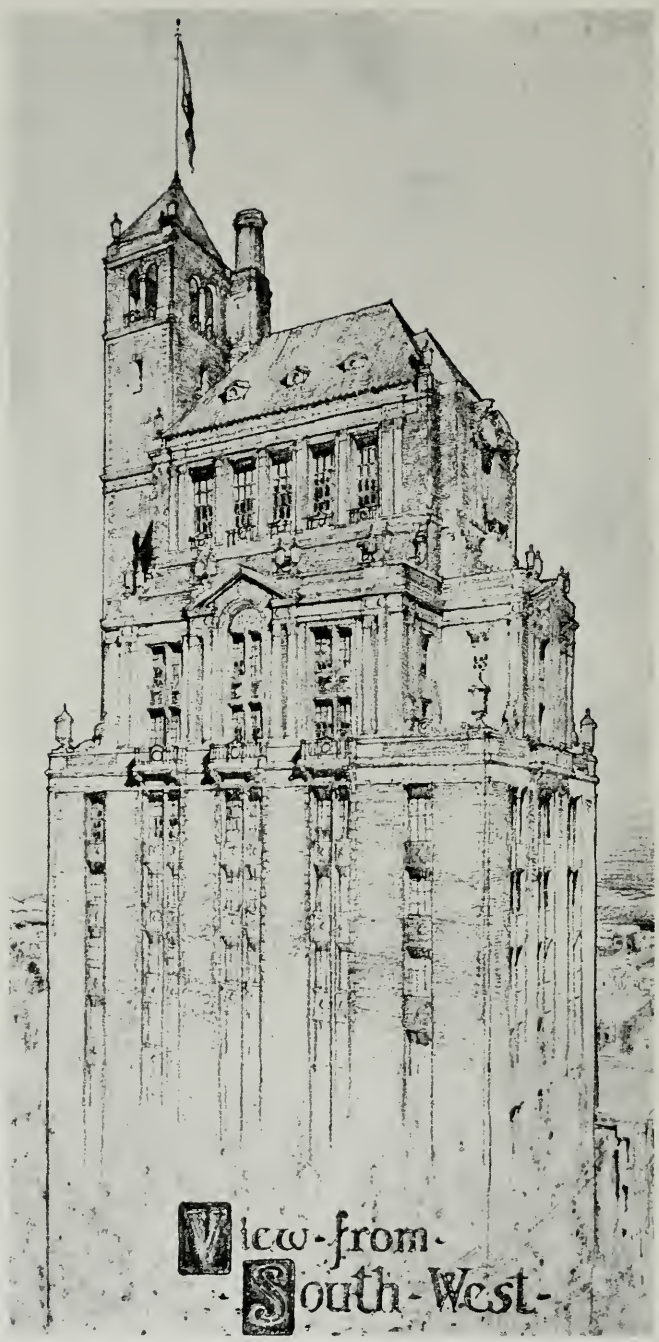

TOWER, ELKS CLUB BUILDING, SACRAMENTO, CALIFORNIA
HEMMINGS & STARKS, ARCHITECTS AND ENGINEERS

Frontispiece
The Architect and Engineer
October 1925

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1925

Vol. LXXXIII
No. 1

Recent Work of Leonard F. Starks & Co., Sacramento

By FREDERICK HAMILTON

TWO buildings of more than ordinary interest stand out in the work of Leonard F. Starks & Company, Sacramento, California, illustrated in this issue of The Architect and Engineer. One is the Elks' Club under construction; the other the Senator Theatre recently completed and pronounced by theatrical men to be one of the best designed and most completely appointed combination playhouses (silent and spoken drama) of its size in the country. With two commodious street entrances — one on K and the other on L street — the theatre is accessible from all points. Its spacious foyers, exquisitely decorated and brilliantly lighted, combine to make one's entrance and exit a source of real pleasure. The auditorium with small balcony, holds twenty-one hundred persons and the unusual roominess of the seats and aisles, contributes not a little to the comfort of the audience. The color scheme, while lavish is not gaudy. The whole is a perfect harmony of color. Concealed lights and a brilliantly illuminated dome offer a final touch to the decorative scheme, carried out in the Empire style with gold as the predominating color.

The Elks' Club building, several studies of which are shown, is a modification of the step-back building now becoming so popular in the Eastern cities. The single exception of this type of office building on the Pacific Coast is the Pacific Telephone & Telegraph building just completed in San Francisco. The Elks' Club will be fourteen stories with the step-off features probably less accentuated than the 26-story Telephone building in San Francisco. The design contains not a few elements of interest. The Georgian Colonial school is the source of inspiration for the exterior in general and has a traditional meaning in the history of Elkdom. The interiors are all of distinct periods of the Italian style.

* * * *

A progressive career has marked Mr. Starks' labors since he first came to California in 1921. At that time the Famous Players - Lasky sent Mr. Starks to California from New York City with instructions to

ELKS CLUB BUILDING, SACRAMENTO, CALIFORNIA
HEMMINGS & STARKS, ARCHITECTS AND ENGINEERS

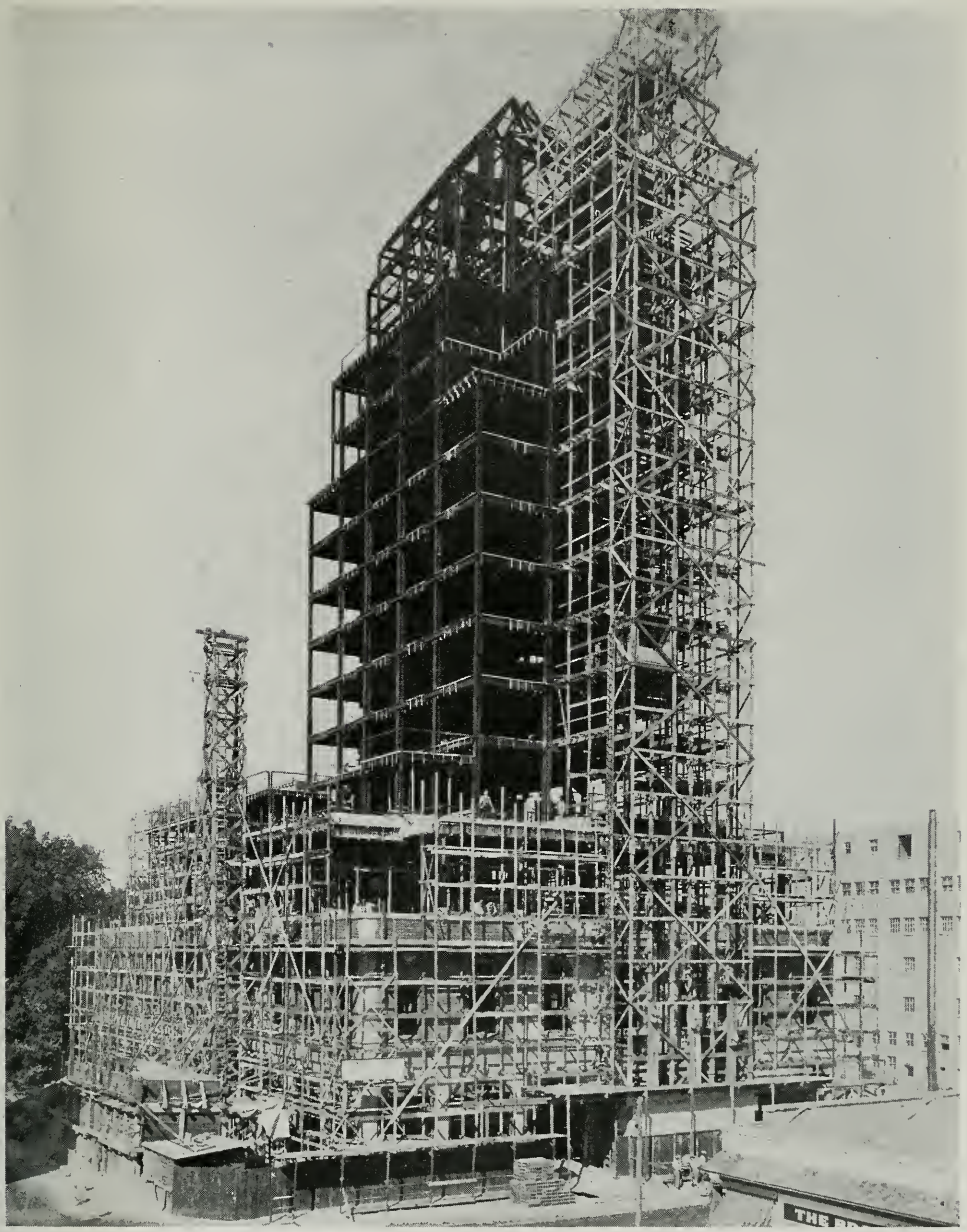

Photo taken September 20, 1925

PROGRESS PICTURE, ELKS CLUB BUILDING, SACRAMENTO
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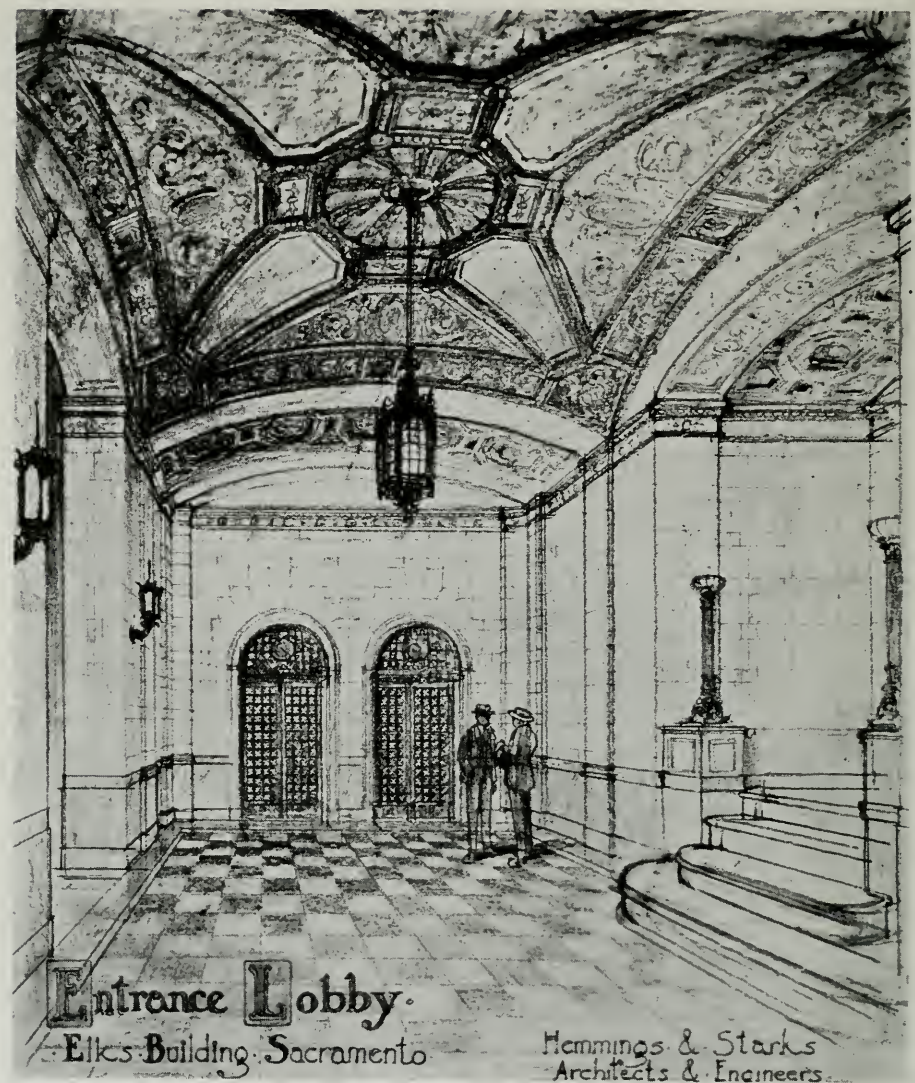
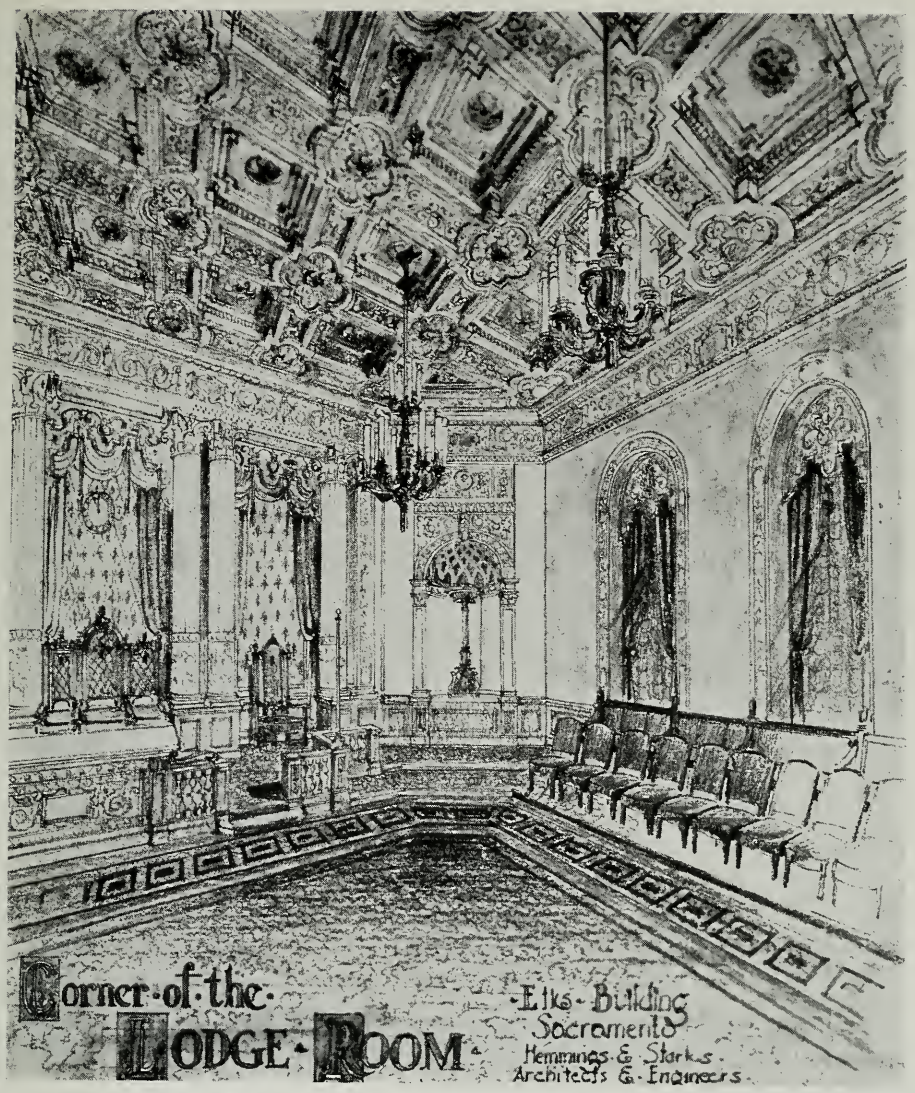


ENTRANCE LOBBY, ELKS CLUB BUILDING, SACRAMENTO
HEMMINGS & STARKS, ARCHITECTS AND ENGINEERS

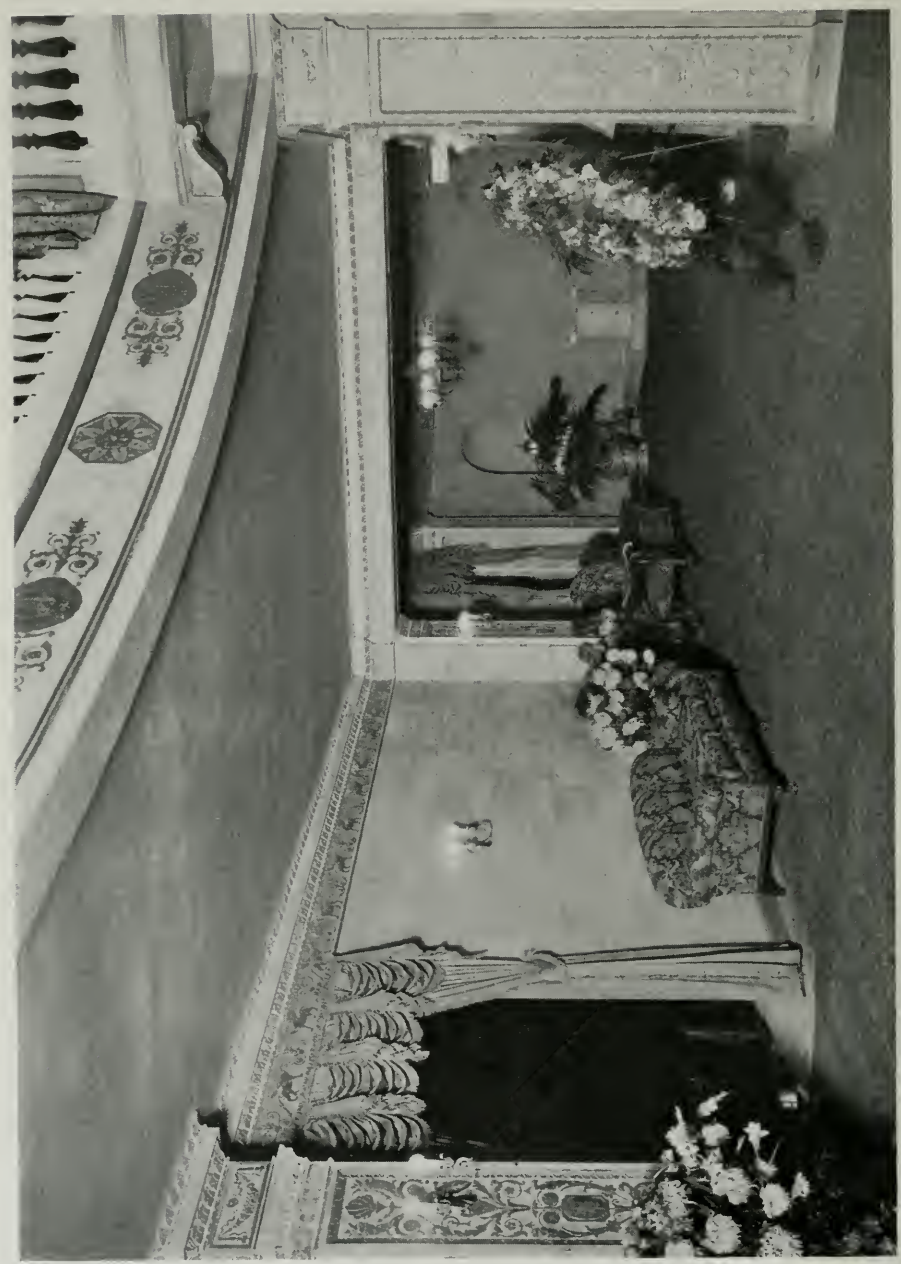
design and construct a chain of theatres on the Pacific Coast, the first of which was to be built in Sacramento. Several months after reaching the Capitol City, the work was abandoned because of a change in policy and management of Famous Players. During the succeeding weeks and months, Mr. Starks took advantage of an opportunity to study Sacramento, its possibilities and future development. In the meantime local capitalists became interested in the building of a theatre for Sacramento, the result of which is the present Senator Theatre.



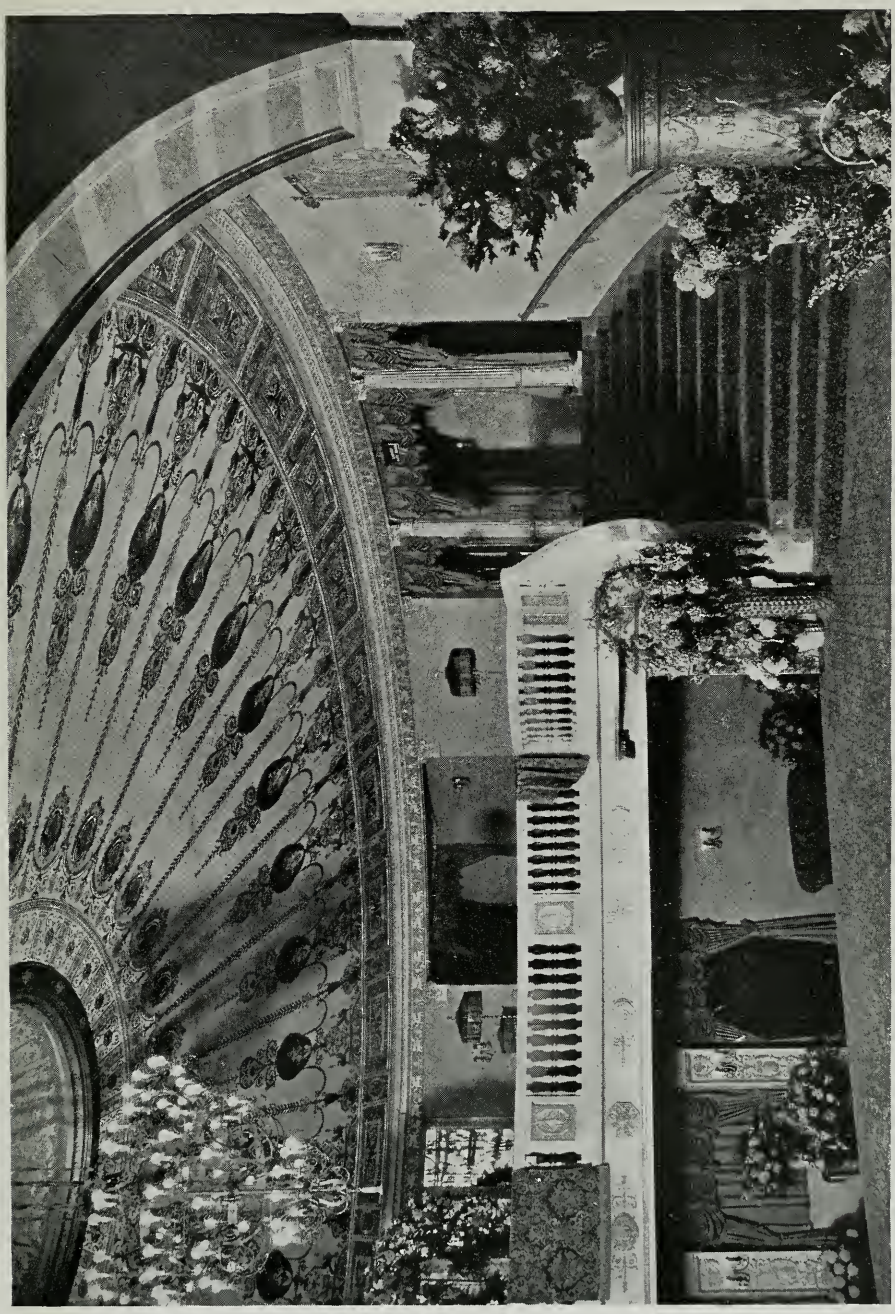
LODGE ROOM, ELKS CLUB BUILDING, SACRAMENTO
HEMMINGS & STARKS, ARCHITECTS AND ENGINEERS

It was while the Senator theatre was in course of construction that Mr. Starks became associated with the late E. C. Hemmings and in June, 1923, the firm was commissioned to prepare preliminary sketches for the Sacramento Elks' lodge building. It was not until May of the following year, however, that the making of actual working drawings was commenced.

Late in 1923, a partnership was formed between Mr. Hemmings and Mr. Starks and during the partnership the following work was turned



ORCHESTRA FOYER, SENATOR THEATRE, SACRAMENTO, CALIFORNIA
LEONARD F. STARKS & CO., ARCHITECTS AND ENGINEERS



GRAND LOBBY, SENATOR THEATRE, SACRAMENTO
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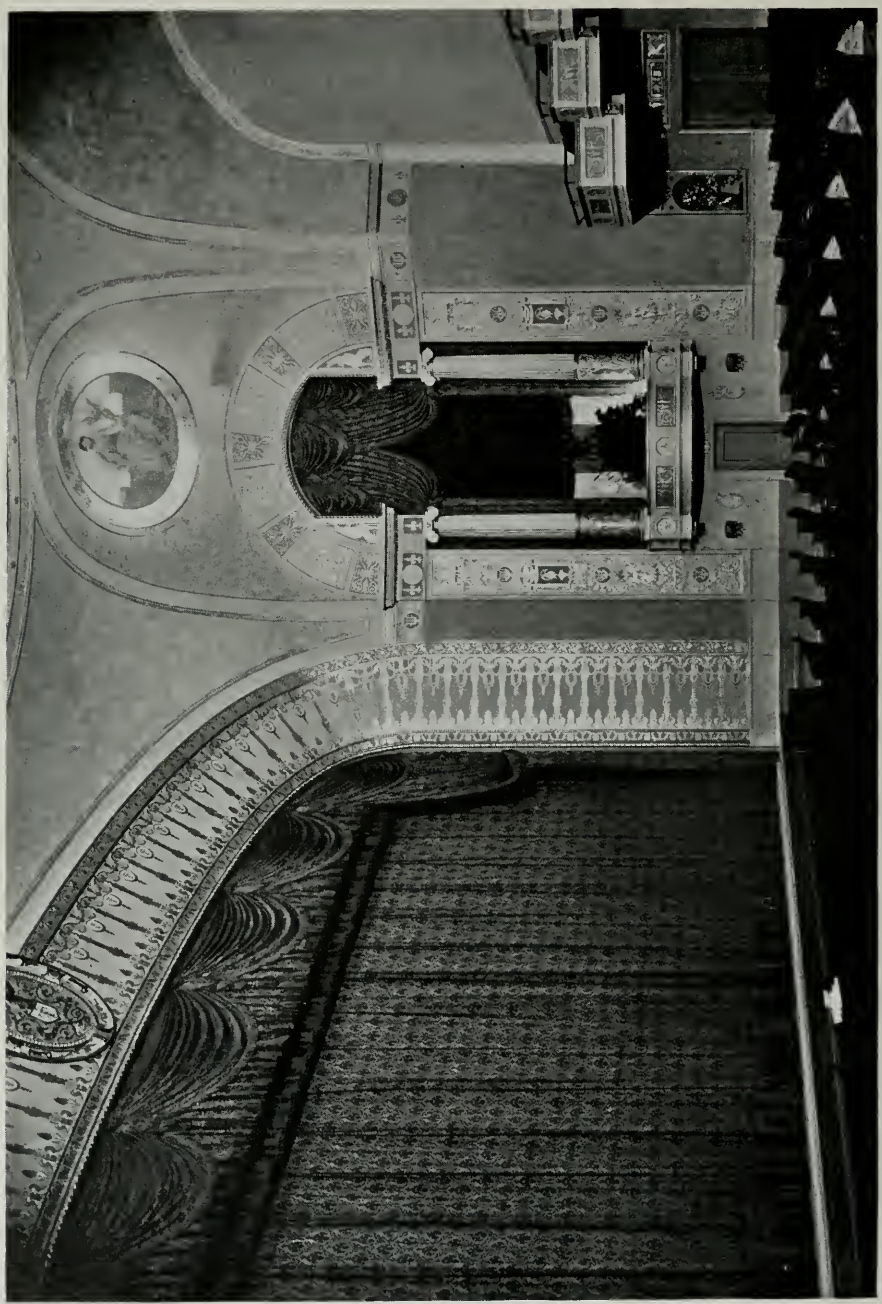

PROSCENIUM AND ORGAN LOFT, SENATOR THEATRE, SACRAMENTO
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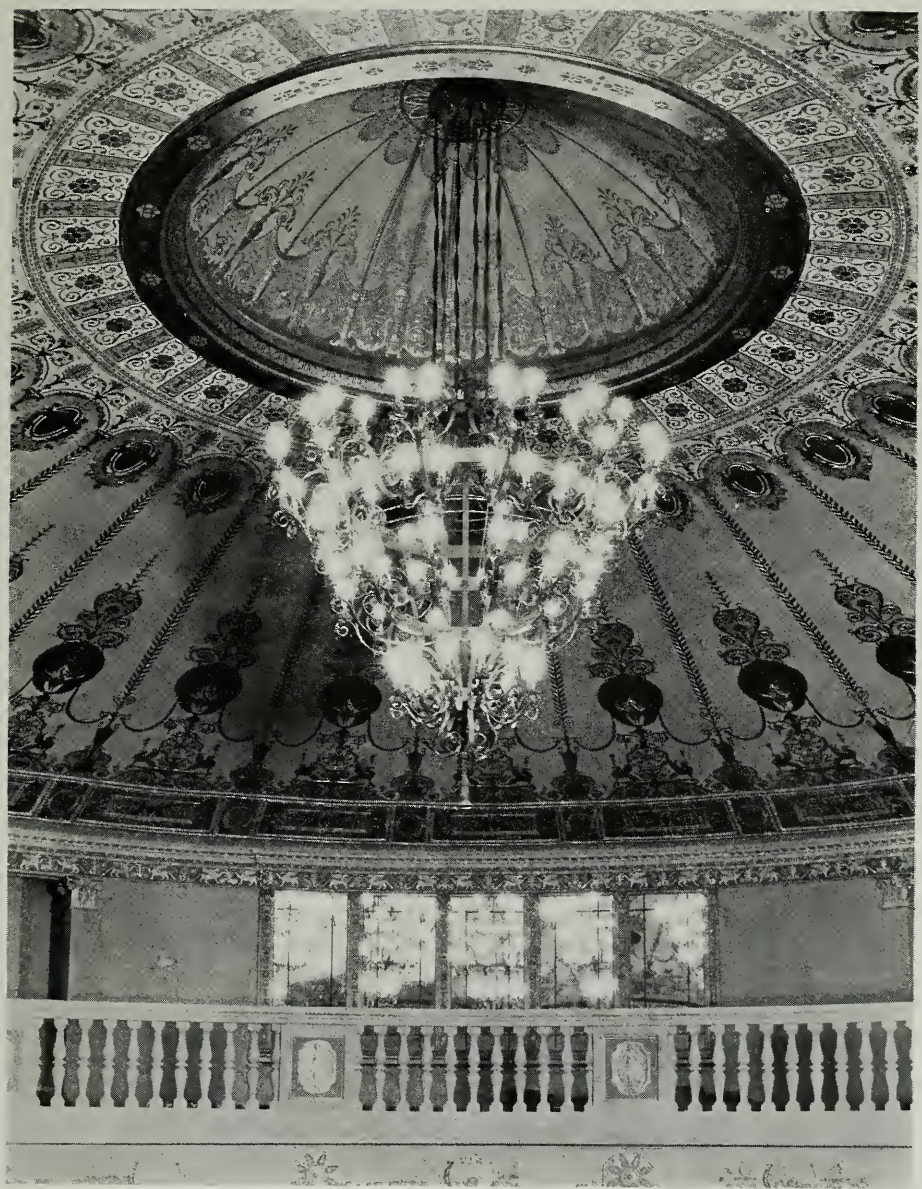


DOME OF FOYER, SENATOR THEATRE, SACRAMENTO
L. F. STARKS & CO., ARCHITECTS AND ENGINEERS

MAIN LOBBY, SENATOR THEATRE, SACRAMENTO
L. F. Starks & Co., Architects and Engineers

out: the W. P. Fuller Co. warehouse, Herman Davis building, the Lewis Apartments at Oak Park, alterations and additions to the Sacramento hotel, the Pioneer Memorial church, and working drawings were completed for the C. P. Nathan & Sons department store building, which never materialized after Mr. C. P. Nathan's death.

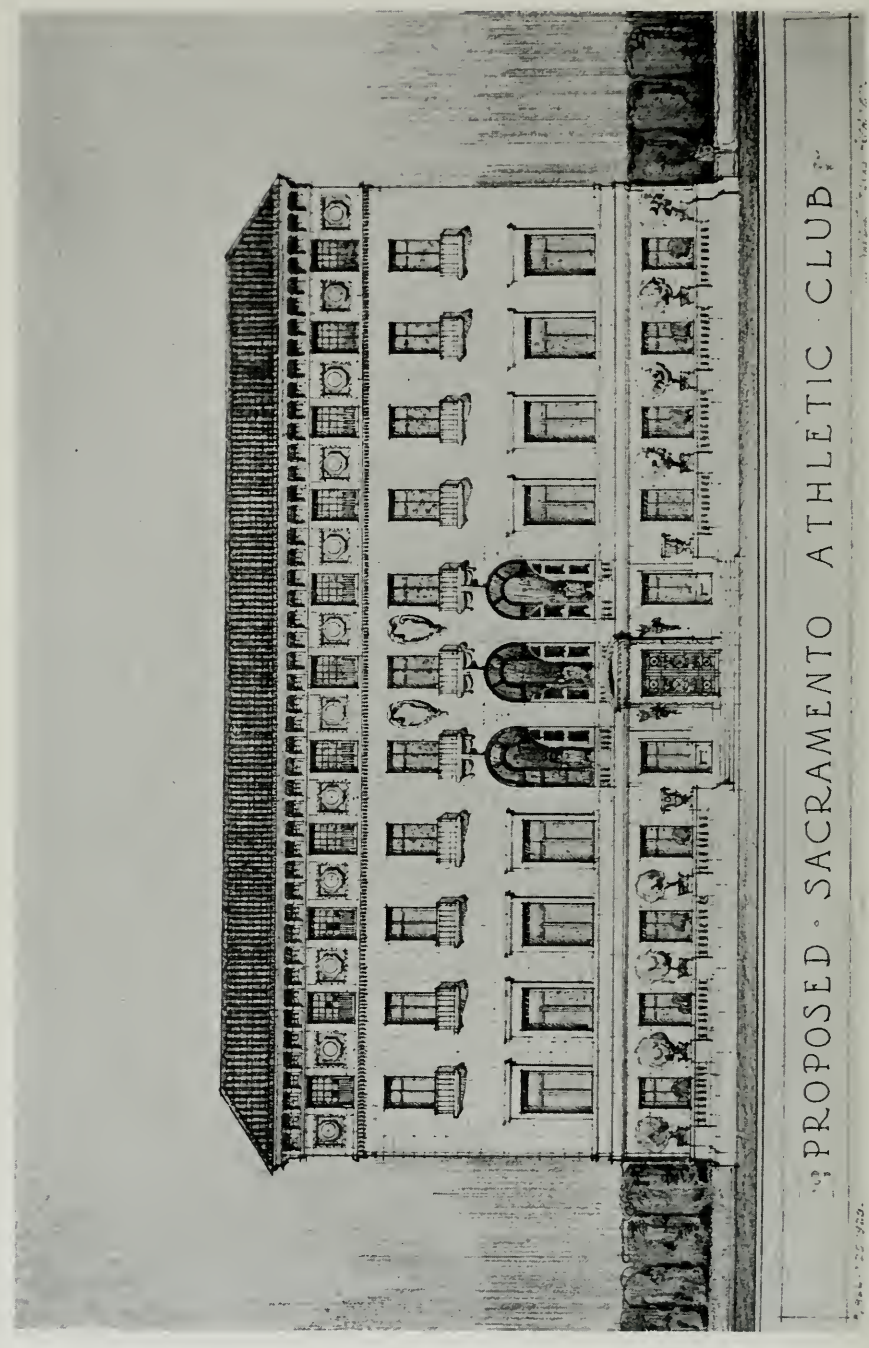
Mr. Hemmings passed away in June, 1924, after an intermittent illness, dating from the previous Christmas. Just prior to Mr. Hemmings' death the firm received orders from the Elks' Hall Association to proceed with the working drawings for the Elks' Club building and the plans were completed December 30, 1924.

All work which is under contract with Hemmings & Starks has been and is being carried to completion under the firm name. All new work is being done under the name of Leonard F. Starks & Co., Edward F. Flanders Associate; Mr. Flanders having become a member of the new firm in January, 1925.

Since its inception the new firm has designed the Frank Z. Ahl building, Sun Mount Preventorium at Colfax, Arnold Bros. garage and show rooms, Fremont Presbyterian church, Russell-Logan battery shop, Brewster Apartments, Percy Reese residence and store building for the El Dorado County Bank, Placerville.

Recent commissions to prepare plans include a $300,000 bank building for the California National Bank of Sacramento; a large moving picture theatre for Mr. Peltier and associates and a church and Bible school for the Christian church, Woodland, to cost $125,000.

HERMAN DAVIS & SONS BUILDING, SACRAMENTO
HEMMINGS & STARKS, ARCHITECTS AND ENGINEERS



LEONARD F. STARKS & CO., ARCHITECTS
EDWARD F. FLANDERS, ASSOCIATE

FRESNO BEE BUILDING FOR MR. JAS. C. McCLATCHY
L. F. STARKS & CO., ARCHITECTS AND ENGINEERS

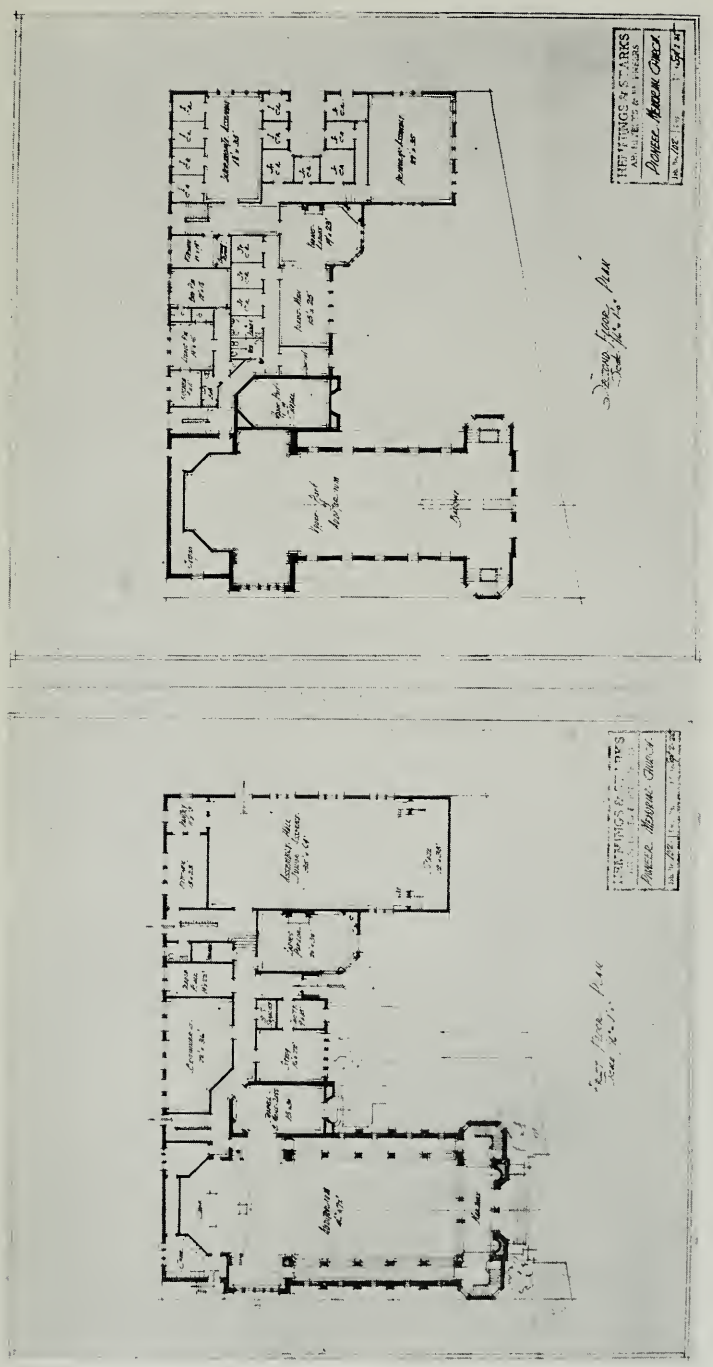
BANK AND THEATER BUILDING, PLACERVILLE, CALIFORNIA
L. F. STARKS & CO., ARCHITECTS AND ENGINEERS

Edward F. Flanders, Associate Architect

FREMONT PRESBYTERIAN CHURCH, SACRAMENTO, CALIFORNIA
LEONARD F. STARKS & CO., ARCHITECTS AND ENGINEERS
Edward F. Flanders, Associate Architect

STUDY, FREMONT PRESBYTERIAN CHURCH, SACRAMENTO
Leonard F. Starks & Co., Architects
Edw. F. Flanders, Associate

STUDY, PIONEER MEMORIAL CHURCH, SACRAMENTO
Hemmings & Starks, Architects and Engineers



PLANS, PIONEER MEMORIAL CHURCH, SACRAMENTO
HEMMINGS & STARKS, ARCHITECTS AND ENGINEERS

FIRST CONGREGATIONAL CHURCH, SACRAMENTO
Hemmings & Starks, Architects and Engineers

BANK BUILDING FOR NEWCASTLE, CALIFORNIA
Leonard F. Starks & Co., Architects
Edw. F. Flanders, Associate

WOMEN'S CLUB BUILDING, ROSEVILLE, CALIFORNIA
Leonard F. Starks & Co., Architects
Edw. F. Flanders, Associate

GREENWALD STORE BUILDING, SACRAMENTO
Leonard F. Starks & Co., Architects
Edw. F. Flanders, Associate

AUTO SALES BUILDING FOR ARNOLD BROS., SACRAMENTO
Leonard F. Starks & Co., Architects
Edw. F. Flanders, Associate

RUSSELL & LOGAN BATTERY SHOP, SACRAMENTO
Leonard F. Starks & Co., Architects
Edw. F. Flanders, Associate

NATHAN DEPARTMENT STORE BUILDING, SACRAMENTO
Hemmings & Starks, Architects and Engineers

W. I. ELLIOTT BUILDING, SACRAMENTO, CALIFORNIA
Leonard F. Starks & Co., Architects
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BUILDING FOR MR. FRANK Z. AHL, SACRAMENTO
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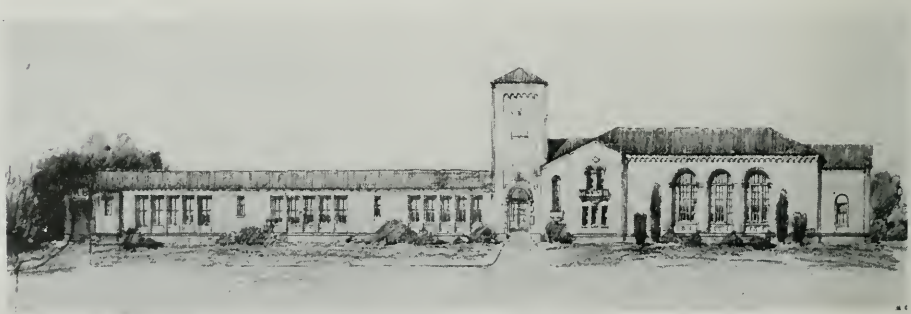

PROPOSED SCHOOL, SACRAMENTO COUNTY, CALIFORNIA
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Edw. F. Flanders, Associate

I. F. MORRIS APARTMENT HOUSE, SACRAMENTO
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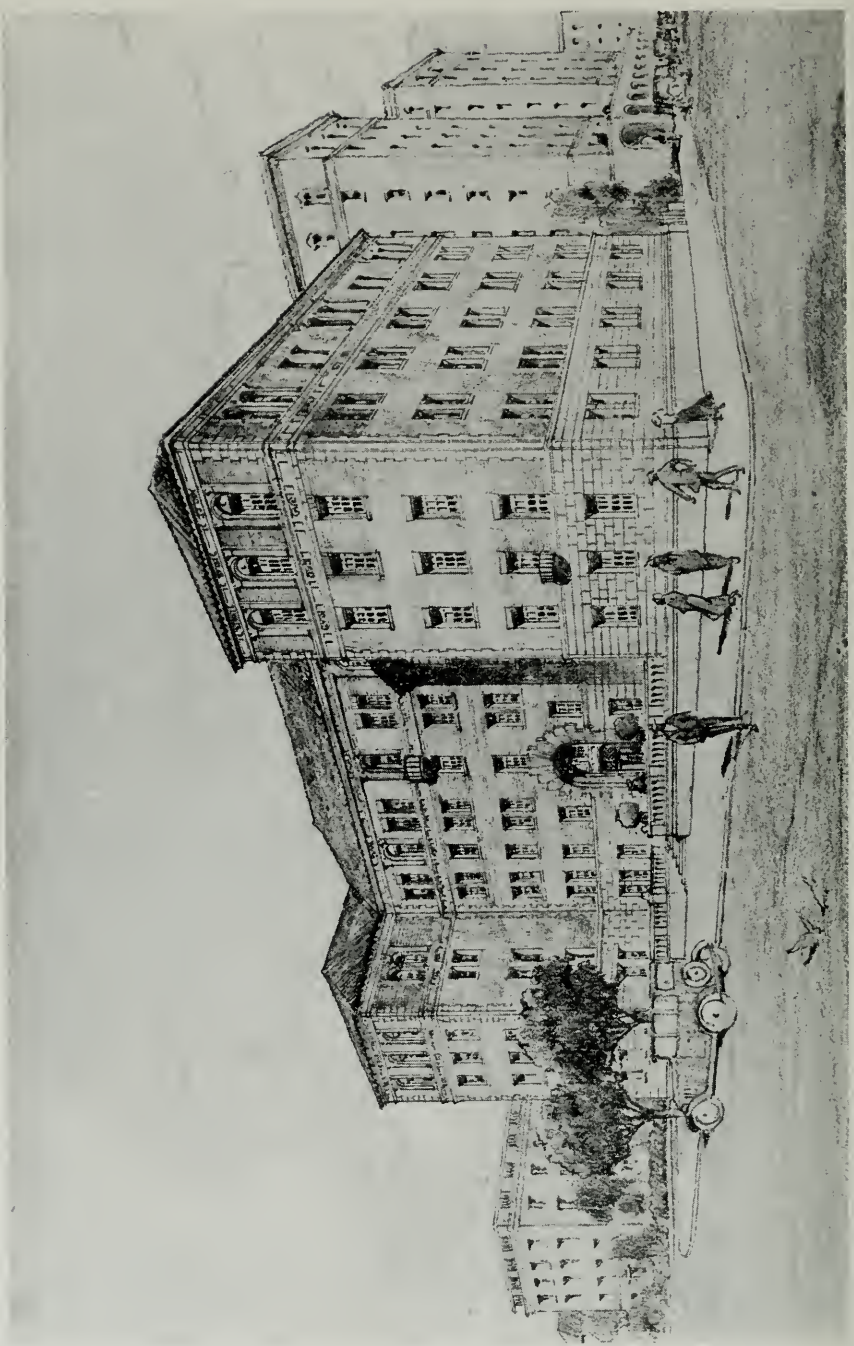
APARTMENT HOUSE FOR MR. A. Y. BATTELL, SACRAMENTO
Leonard F. Starks & Co., Architects
Edw. F. Flanders, Associate



J. W. BREWSTER APARTMENTS, SACRAMENTO, CALIFORNIA
LEONARD F. STARKS & CO., ARCHITECTS AND ENGINEERS

Edw. F. Flanders, Associate

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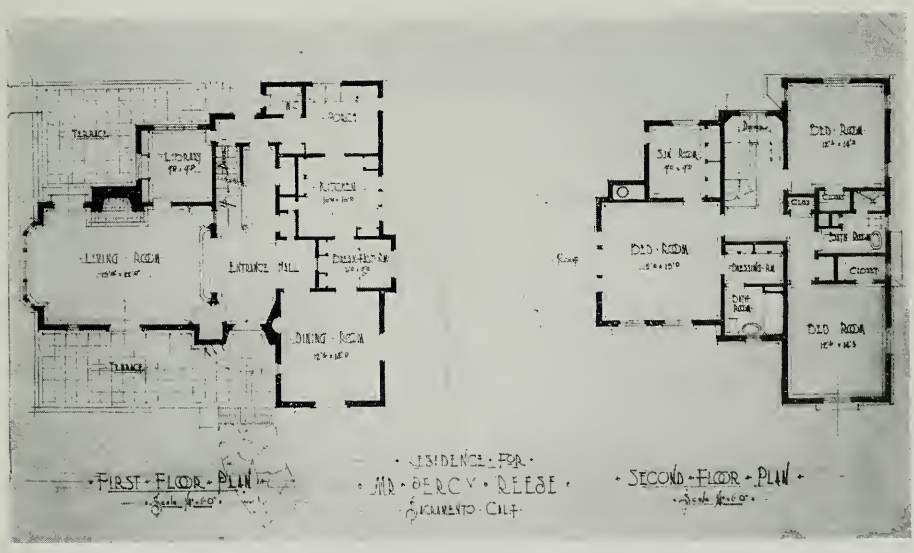


PLANS, HOUSE FOR MR. PERCY REESE, SACRAMENTO
Leonard F. Starks & Co., Architects
Edw. F. Flanders, Associate

Labor Conditions Affecting Building Construction

Results of a Recent National Survey by S. W. Straus & Company

NOTWITHSTANDING the tremendous volume of building, there are indications that the period of rising wages in the construction industry is nearing an end, according to a national building labor survey made public by S. W. Straus & Co.

Current building labor conditions are summed up as follows:

1. National movement for higher wages seems definitely checked for present.

2. Wage rates show greater stability although there is still some slight upward tendencies.

3. No indication of a general movement to reduce wages and only few cities report any downward revision of scales.

4. Longer agreements being signed by contractors that will tend to stabilize the industry.

5. Except for several jurisdictional disputes, labor is fairly tranquil.

6. Building labor is well employed and only an occasional shortage of skilled craftsmen is reported.

7. Bonus payments and practice of contractors bidding against each other for men have largely disappeared.

8. Unskilled labor maintains high rates, although supply being increased by slackness of factory employment.

9. Bulk of common labor supply needed for building industry being furnished by Canada and Mexico, as immigration laws have considerably reduced supply from Europe.

10. Apprenticeship schools steadily increasing supply of skilled building craftsmen.

While the wage changes reported during the last month still show an upward movement among the building trades, the number of increases is insignificant compared with previous months this year and in the last four years. The majority of increases that were granted were reported from cities where the wages being paid are not up to the level of larger cities where the maximum rates set the pace for the industry. Reports from all sections of the country indicate that the period of rising wages is drawing to an end, as there are very few increases being recorded in cities where high wage levels exist.

Review of wage scales for the entire country show that St. Louis continues to lead the country with the highest wage scale. Common labor is receiving from 45 cents to 77½ cents and bricklayers are receiving $1.75 per hour.

Bricklayers in the leading cities are receiving 90 cents to $1.75; carpenters, 45 cents to $1.50; hod-carriers, 30 cents to $1.25; structural iron workers, 65 cents to $1.50; plasterers, 90 cents to $1.75; lathers, 80 cents to $1.62½; stone masons, 85 cents to $1.55; painters, 50 cents to $1.43¾; plumbers, 70 cents to $1.50; electricians, 50 cents to $1.50; hoisting engineers, 62½ cents to $1.65; and common laborers, 25 cents to 87½ cents.

Reports from Canada indicate that wage rates are well stabilized although there is some slight upward tendency. According to the Department of Labor the wage rates in Canadian cities are 169.7% higher than in 1913 and no perceptible decrease in building costs, due to a reduced wage scale, is expected during the next few months. That

building trades wages in the Dominion are much below those in the building trade in 13 Canadian cities in 1924 are: Bricklayers, $1.08.8; carpenters, 73.4 cents; electricians, 79.1 cents; painters, 69.6 cents; plasterers, $1.05.2; plumbers, 83.6 cents; stone cutters, 91.4 cents, and laborers, 43.2 cents.

Reports from various sections of the country indicate that the supply of both skilled and unskilled labor is ample to meet the needs of the industry, except in a few of the larger cities such as New York, Denver and San Francisco, where there is a slight scarcity of bricklayers, plasterers and carpenters. Many cities, such as Atlanta, Baltimore, Birmingham, Dallas, Kansas City and New Orleans report a surplus of both skilled and unskilled labor.

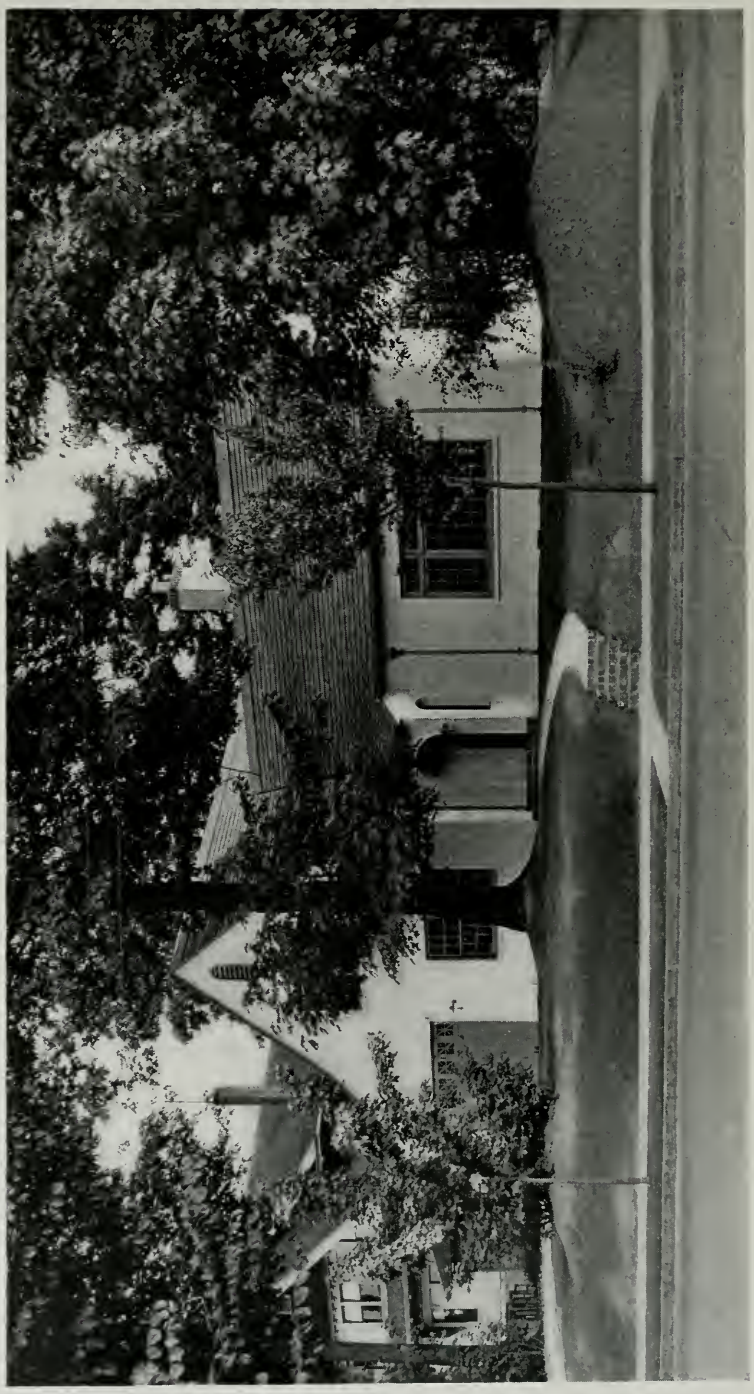
The supply of common labor has been considerably augmented during the last few months by the slackening of employment in industrial plants. On the other hand, the restrictive immigration laws have reduced, to a considerable extent, the supply expected from Europe and the bulk of common laborers needed for the construction industry is being furnished by Mexico and Canada. More common laborers are leaving than are coming to the United States since the recent immigration law become operative. There were 27,908 common laborers admitted from July, 1924, to April, 1925, as against 97,886 during the same period a year previous, but 44,750 left the country during the same time, making an actual deficit of 16,842.

The release of thousands of laborers due to the slackening of factories has, however, had a tendency to benefit the building industry. Availability of this supply has reduced the common labor rate of the nation to 53 cents per hour compared with 56 cents per hour in July, 1924.

The supply of labor is being steadily reinforced by the apprenticeship training schools. Evidence of this is found in official figures recently made public by the bricklayer's union, which shows that the number of journeymen and apprentices in this trade is rapidly increasing. These figures show that in June, 1925, there were 111,304 journeymen and 11,516 apprentices as against 108,484 journeymen and 10,656 apprentices in July, 1924.

Today a building program is going forward that would have been seriously handicapped for want of labor in the years of 1922 and 1923 when bonus payments, labor shortage and material scarcity was disrupting the building industry. The practice of contractors bidding for men has largely disappeared. Only an occasional shortage of plasterers, bricklayers or carpenters is reported. It appears to be the disposition of the contractors to renew present scales and there is no indication of any general movement to reduce wages. There is a growing tendency on the part of employers to make two- or three-year agreements instead of one-year contracts because it is felt that the longer agreements will tend to stabilize the industry.

Both laborers and employers are showing a disposition to peacefully adjust their differences, although contractors are increasing their resistance to demands for higher wages. Diplomacy is taking the place of strikes and lock-outs and the industry is proceeding without any serious disturbances.



HOUSE OF MR. W. S. JONES, PORTLAND, OREGON
GEORGE FOOTE DUNHAM, ARCHITECT

The House Between

—Being a Home That is More Than a $5,000 *Bungalow and Less Than a Millionaire's Mansion*

By VIOLET W. DUNHAM

EVERY architect has the dream that some day a client will drop into his office and say "Design for me the home that will be architecturally right in all details, build it for me with the best materials and with the best workmen obtainable and send me the bill." Possibly no architect has ever heard those words, but nevertheless the dream persists. Another apparition is that he might build for himself a home which will bring into expression beauty of design combined with honesty in materials and workmanship. George Foote Dunham desired to bring into expression a home ideal for the small family, a home rightly related to its surroundings, to be built without the thought of commercialism and time limitation, a home reasonably moderate in price yet so convenient that it might well be called a servantless house.

A large, naturally wooded corner in the exclusive Eastmoreland district, Portland, Oregon, with magnificent old maples and firs and natural shrubbery of vine maple and elder berry, afforded the ideal setting. No tree or shrub was to be injured or disturbed, and the house was designed for the setting, the maple tree at the entrance being the central motif. When the plan and site were ready, craftsmen were selected to carry on the construction. Work was done under separate contracts, and the craftsmen worked together with mutual understanding, bringing out the thought of the old guild, with keen enjoyment of the work, and impelled by the thought that this home was to express an ideal, the best in craftsmanship, and a model for future work. Naturally with this impetus progress was spontaneous and to mutual advantage.

In construction the house is hollow tile, as it was found this type cost but five per cent more than frame, and this also permitted the elimination of much woodwork on the interior. The plaster is a splendid example of stippled work, and all walls are painted in oils.

The photographs on the following pages in description show the entrance to the home through the vestibule under a big maple. The curved entrance door with its unique knocker opens into a hall with arched ceiling, and runs through to the terrace door opening onto a flagstone terrace under the vine maples, and with a friendly garden near by. On one side of the hall is the large living room, with high ceiling. No picture mold or trim is used, but thoughtful provision was made for drapery rods and pictures by the placing of wood blocks before plastering. Studio windows of leaded plate glass give park-like views on north, south and west sides. Opposite the living room is the dining room with its corner cupboards and wide sill between. The kitchen might well be termed an "electric maid" kitchen. All possible woodwork is eliminated, all corners rounded, and cupboard doors are veneered wood with no panels to catch dust. Counters of glazed Belgian tile have under them countless built-in necessities, including table, bread boards, bins and cupboards. The electric stove has been built on a platform, the space beneath being used for cupboards. Electric dishwasher and numerous electrical outlets meet all requirements. Hot water is continuous by means of an electric storage heater.

ENTRANCE, HOUSE OF MR. W. S. JONES, PORTLAND
George Foote Dunham, Architect

The bathrooms should have special mention, as they are as sanitary as a hospital, having rounded corners, tile floors and no woodwork. Heat is furnished by gas heated air, controlled by clock and thermostat,

TERRACE DOOR, HOUSE OF MR. W. S. JONES, PORTLAND
George Foote Dunham, Architect

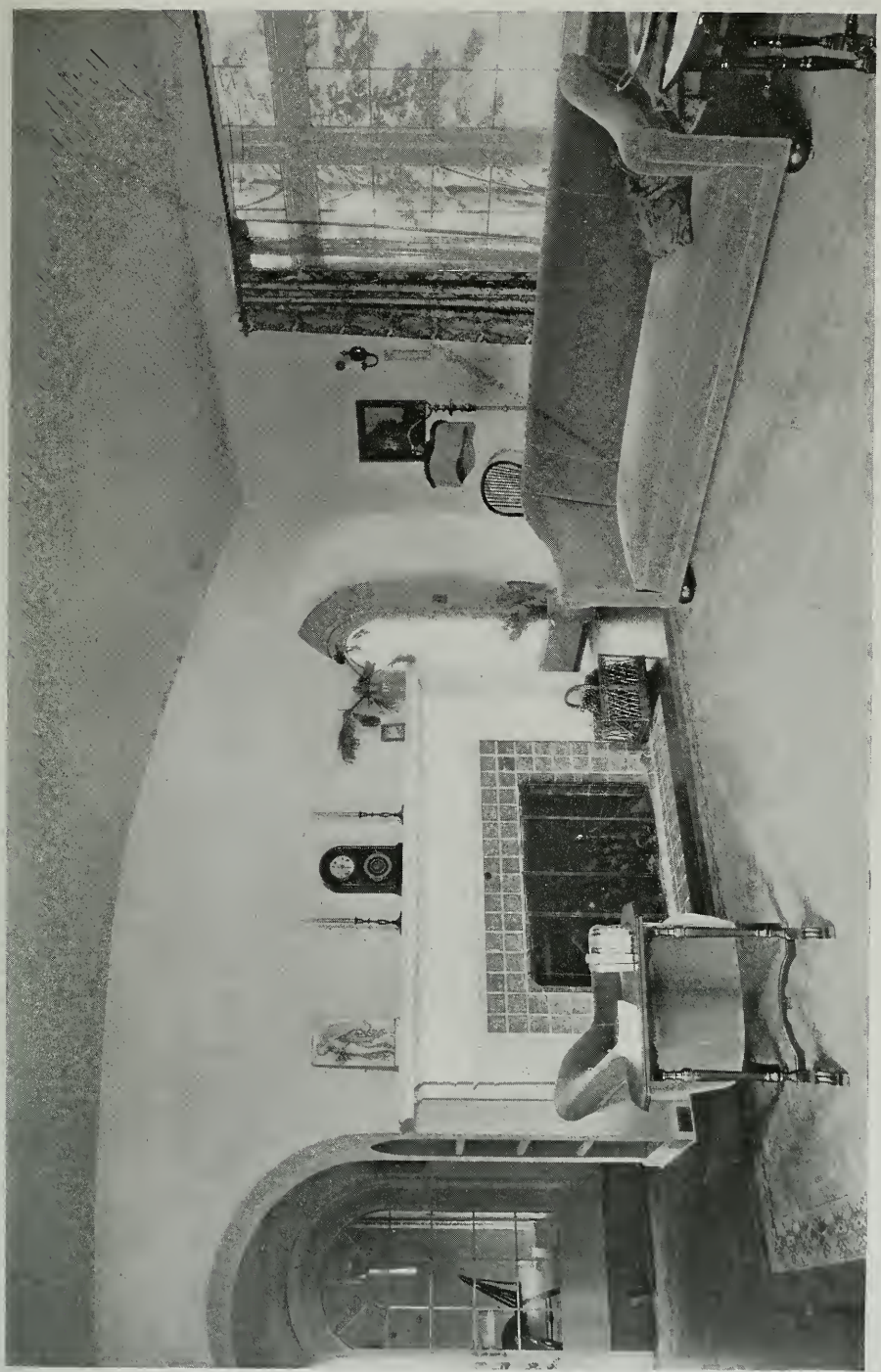
eliminating fuel, dirt and labor, and completing the idea of a "servant-not-needed" home.

The same attention to detail has been carried out in the garden,

HALL, HOUSE OF MR. W. S. JONES, PORTLAND
George Foote Dunham, Architect

harmony between the home and the garden being achieved by using flowers of the same colors as the interior decorations, otherwise the natural wild shrubbery and velvety lawn are unbroken.

Universal admiration of this home justifies the architect's ideal. Living in a time of hurry and commercialism, we hear so often the request to build quickly and as cheaply as possible, and in proportion as this tendency is overcome through holding stedfastly to such ideals of design and construction as outlined, will clients find more lasting satisfaction in home building.



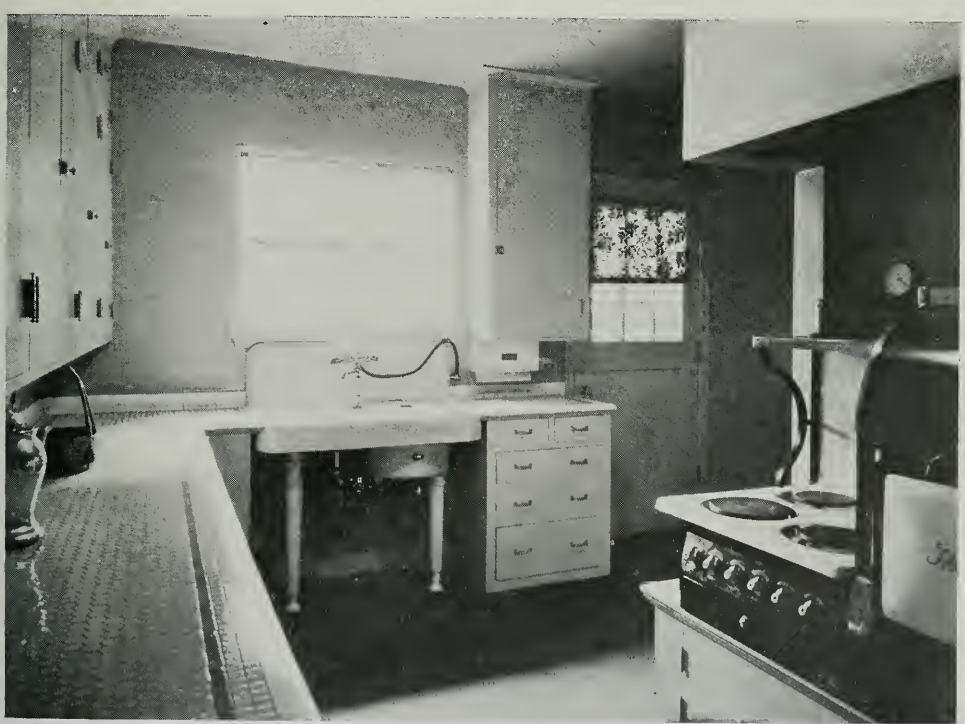
LIVING ROOM, HOUSE OF MR. W. S. JONES, PORTLAND
GEORGE FOOTE DUNHAM, ARCHITECT

HALL FROM ENTRANCE, HOUSE OF MR. W. S. JONES, PORTLAND
George Foote Dunham, Architect

DINING ROOM, HOUSE OF MR. W. S. JONES, PORTLAND
George Foote Dunham, Architect

PUBLIC LIBRARY

DINING ROOM, HOUSE OF MR. W. S. JONES, PORTLAND
George Foote Dunham, Architect



KITCHEN, HOUSE OF MR. W. S. JONES, PORTLAND
George Foote Dunham, Architect

A Concrete Cottage Designed to Withstand Earthquakes

By FREDERICK RINGS
Consulting Engineer, London, England, in Concrete

THE design of houses and other buildings in areas subject to earthquakes should be guided by certain principles with a view to preventing the destruction of human lives and the buildings themselves.

There appear to be three distinctive movements during a shock period, viz: The upheaval or lifting movement, the creation of fissures and the oscillation.

As regards the first, it is obvious that the lifting movement may occur under the whole or any part of the building and in order to provide for the requisite resistance on part of the building the latter should rest on a raft foundation, that is to say the weight of the structure and its contents should be spread uniformly over the whole area of the ground occupied by the building instead of the wall foundations only. Furthermore, this raft foundation should be designed in such a manner that it can act in cantilever fashion if required and the structure itself should form part and parcel of the foundation being designed, in fact as a box or series of boxes substantially tied together so that the whole structure can act as a beam.

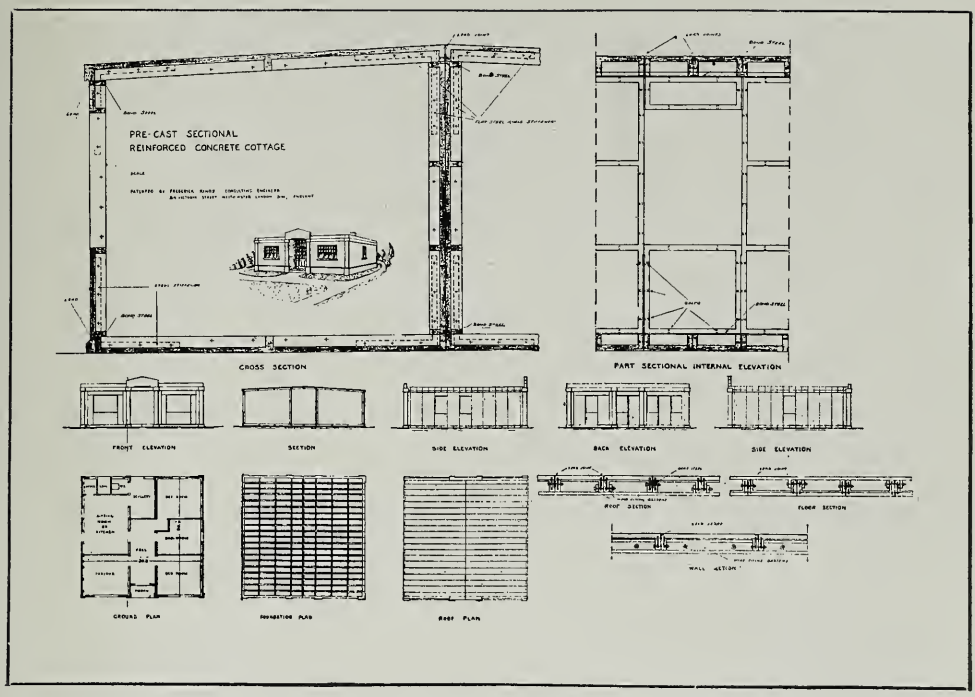
The creation of fissures means the splitting of the ground under the building, the tendency of which is to split everything fixed to the ground. Foundations should, therefore, not extend into the ground but simply rest on the surface as otherwise the force acting in two opposite directions is bound to split the building and thus cause collapse.

The oscillation itself sets up torsional stresses and under these parts of the foundation walls and roof will be in rapid succession subject to tension compression and shear. This means that either surface area of the walls may be subjected to these stresses and the walls should, therefore, be designed as a series of columns reinforced to resist these stresses in every direction. The roof should be able to act as a beam in both directions. Under oscillation the principal stresses are then conducted to the angles of the building, viz: the junction of walls and raft and walls and roof, and these parts should be particularly strengthened and adequately tied together to the intent that the whole of the building in all its component parts oscillates at the same ratio, as one divided whole.

Earthquakes being always likely to cause fires, the building—or at least its external shell—should be composed entirely of fireproof material.

With special reference to the recent calamity in Japan it seems reasonable to presume that the authorities should endeavor to provide new housing accommodation of an improved kind at the earliest possible moment, and that a scarcity of labor and shortage of material would exist.

Under these circumstances it would appear an ideal proposition if fireproof houses were designed to resist oscillation and the other strains mentioned above could be manufactured and imported into Japan and they should be designed in such a way that they can be quickly put up with unskilled labor and be ready for immediate occupation.



PLANS, SECTIONS AND DETAILS OF PRE-CAST SECTIONAL REINFORCED CONCRETE COTTAGE PATENTED IN ENGLAND

The writer suggests that his system illustrated by the accompanying drawings is the solution of all the difficulties prevailing. The house is manufactured in sections composed of concrete, reinforced with steel and designed, when put together, to resist all the strains a building is subject to during an earthquake. The finished building is permanent and does not require any upkeep or future repairs whatsoever and is fire proof. Provision is made for fixing a suspended ceiling, an inner wall lining and a floor by simply nailing matchboarding to the fixing battens bolted to the concrete members of the outer shell. In this fashion a hollow space is created all around the building, thus providing insulation against sudden changes in temperature and making the house comfortable at all seasons. The sections are bolted together and steel ties are provided to deal with the strains above mentioned. The joints, wherever exposed to external influences of water or damp, are made of lead which may be caulked in a hot or cold state. The bolt holes are formed in the manufacture and all bolts, nuts and washers are supplied with the sections, which latter are numbered, coinciding, with a key plan so that the various members are easily identified.

The pressure on the ground is less than that caused by the weight of an average human body being about 1 cwt. per foot super, which is practically negligible.

The sections are manufactured at Purfleet on the river Thames, the site adjoining the river, so that they could be immediately transported to sea going steamers. The total weight of the sections for a cottage 30 ft. x 30 ft. is about 52 tons and that of the sections for a smaller cottage 22 ft. x 21 ft. is 31 tons.

As regards the ceilings and inner wall surfaces, these are suggested in boarding as the quickest and cheapest method, but they may be of any material such as asbestos sheets and plaster or concrete slabs. The floors may be boarded as shown or filled in solid with weak concrete and finished with tiles or any other material required.

It will be observed that the houses may be enlarged at any time by adding further sections. When this is done the last bolts are unfastened and new sections added, the joints being easily removable.

All that is required to be done on the site, is to level the ground, put the sections in place and bolt them, which can be done by anybody of average intelligence.

The internal finish consists simply of bolting down the fixing battens and nailing boarding thereto which again does not require skilled labor. Doors and windows, if required, can be shipped with the sections together with any modern conveniences and fittings that may be required.

Buildings of all kinds such as shops, railway stations, stores and so on can be easily constructed with the sections and permanent, shockproof, fireproof structures of all types erected with great rapidity.

* * * *

Mr. Polk's Last Work

BIT by bit, the streets of San Francisco are being adorned with real works of art, of which we may well be proud. The latest addition is the marquise erected by the First Federal Trust Company over their Post street entrance in the First National Bank building.

This piece has an additional interest in that it is the last work of the late Willis Polk, San Francisco's world-famous architect and artist. It recalls a favorite expression of his: "That ever-elusive, much-sought-after quality, artistic charm must not be lacking", even in the most utilitarian work. It is truly a work of art full of artistic charm.

As evidence of the painstaking care, thought and workmanship of the highest type that goes with such a work as this, it is interesting to know that the commission was given to Mr. Polk in April, 1924, the design and model slowly evolved by him over a period of months and finally completed now by his successors, Willis Polk and Company.

The architectural modelling was done by Thomas Gorsuch, sculptural work by Miss Emily Michels, metal work by the Forderer Cornice Works and color direction by Guittard Piazzoni.

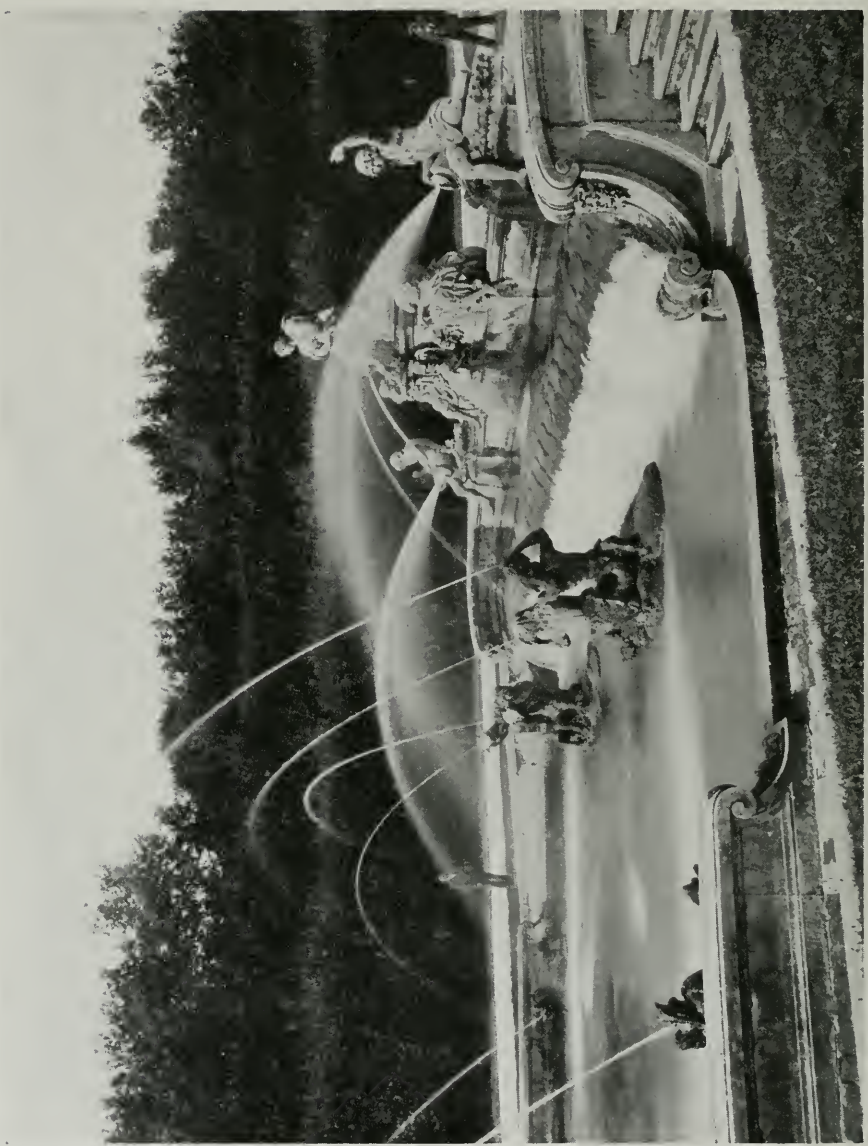
* * * *

Movie House Locates Heating Boilers on Roof

Novel practices in heating and ventilating design have been adopted in the Capitol theatre of London, generally regarded as the most luxurious and perfectly-equipped motion picture house in Europe. The entire system is fired by city gas in a tubular gas boiler. By using gas the theatre has also aided the "brighter London" movement to eliminate the smoke nuisance.

One of the most interesting features of the installation is the fact that the gas boilers are placed on the roof where they are entirely out of the way. As the result the basement and part of the first floor are made available for other and more remunerative purposes, as well as the space ordinarily required for coal and ashes.

MARQUISE FIRST FEDERAL TRUST CO.. SAN FRANCISCO
WILLIS POLK & COMPANY, ARCHITECTS



CASCADE AT CASERTA, NEAR NAPLES
LUIGI VANVITELLI (1700-73), ARCHITECT

FOUNTAIN IN THE VILLA D'ESTE, AT TIVOLI

Italian Renaissance Fountains

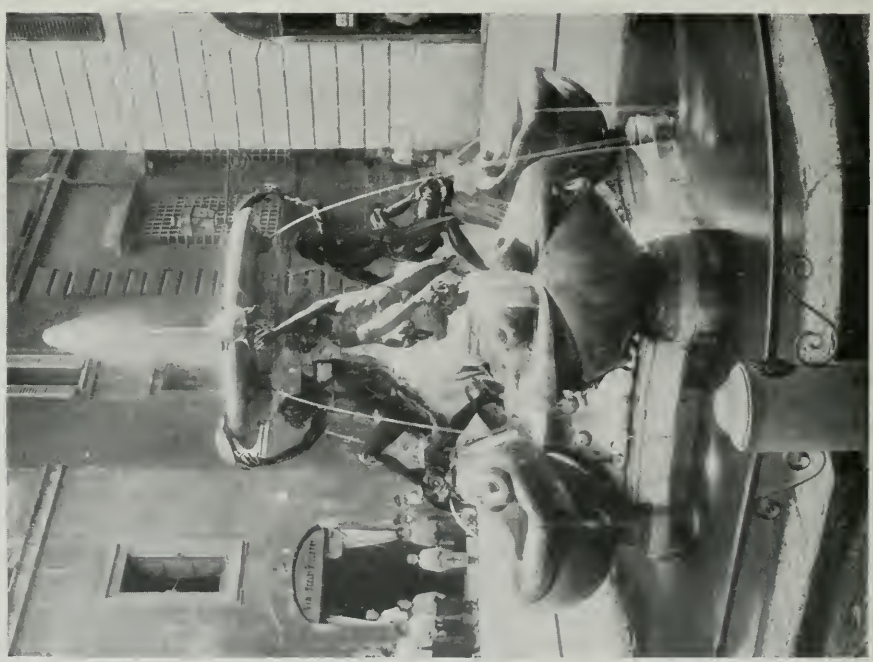
IT has become fashionable of late years to be familiar with the old gardens and fountains of Italy, and there have appeared several elaborate volumes illustrating and describing them in detail. The architect can delve with profit into this phase of Italian art, for there is more to be learned by a careful study of the subject than is apparent at first sight.

The Romans built villas long before the sixteenth century. There was erected, for instance, more than 100 years before Christ, the Villa Adriana at Tivoli; almost on the site of the modern Frascati was Tusculum, a popular summer resort of classic times. Pliny and Mummius possessed villas of size and importance, and there were many others of an early date.

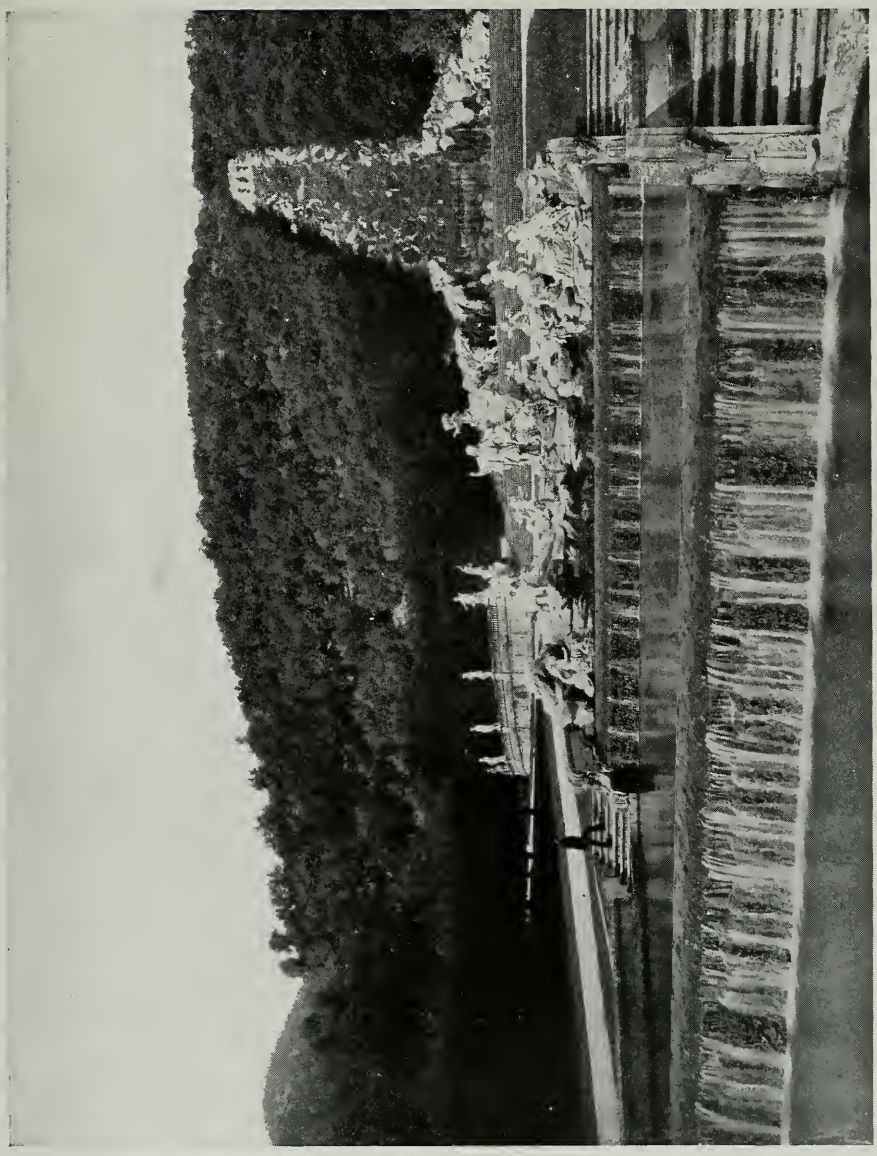
With the coming of the Dark and Mediaeval Ages, there was developed the habit of fortifying the country house against enemies and this state of affairs was naturally reflected in the waning of the garden cult. The maintenance of a small vegetable patch was about

EDITOR'S NOTE—Illustrations courtesy of Thomas Machen, architect, Baltimore, Maryland, and the National Association of Marble Dealers, publishers of "Through the Ages."

FOUNTAIN DELLE TERME, ROME. A NAIAD



FOUNTAIN DELLE TARTARUGHE, ROME, BY LANDINI



CASCADE IN THE ROYAL GARDENS AT CASERTA
THE FIGURES ARE ALL OF WHITE MARBLE

all that was ever attempted and even this was a precarious matter. The massive basements of the later Frascati villas, which were constantly subject to the raids of the hill bandits of the vicinage, were the outcome of such conditions.

The custom of erecting villas on the hills surrounding Rome was the logical result of the malarial conditions that prevailed in Rome during the summer months—and still persist to some extent in spite of the precautions of later day science. Since the disease is associated with low lying and marshy tracts, the villas were always built on the lofty slopes close by or on the more distant heights of Frascati.

The position on the site was usually handled with considerable skill. "An axial line," says Briggs, "is usually taken from the main entrance to the grounds through the center of the house and beyond, and a formal treatment is adopted. But the whole triumph of this Italian garden design lies in its adaptation of nature to a conventional treatment, for

FOUNTAIN DELLA ROCCA, BY VIGNOLA, AT VITERBO

. . . the object of the Italians was not to create nature but to adorn it."

The architect led one by gentle stages from the saloons of the house to a formal terrace, adorned with statues and balustrades, and thence through a formal ilex-hedged walk to a rustic wilderness of woods beyond. As we have remarked in a previous article, the brillant Italian sun was responsible for an almost complete absence of flowers. In their place were demanded two things in the garden—shade and running water. The first was not a difficult matter to provide, but the services of a hydraulic engineer was as much a necessity as the work of an architect.

The assignment of the water engineer was more than to supply water for the cascades and fountains of every kind, though these were prominent features in all the gardens; in many cases he was called upon to originate quaint conceits for the amusement and surprise of the delighted guests, oftimes resulting in generous dousings to the more

unsuspicious. These wettings were taken without resentment, in keeping with the broad humour and slap-stick comedy of the day. Evelyn's diary at Tivoli some years later speaks of the "many devices to wet the unwary spectators, so that one can hardly walk a step without wetting to the skin." Montaigne tells us of organs played by water, the appearance of chirping birds and owls, and of many scientific tricks. Elsewhere we read of a house party, watching a sunset on a collapsible island near Isola Bella, which almost came to a tragic end when the whole group began sinking beneath the waters of the lake and drowning was imminent.

The many villas of Frascati form the best group in Italy and exhibit a variety of design. The Villa Aldobrandini should be mentioned; others of importance are the villa Torlonia, with its beautiful reservoir surrounded by balustrades, supplying a cascade that descends in curious ramps; the Villas Falconieri, Mondragone, Lancellotti and Mutti

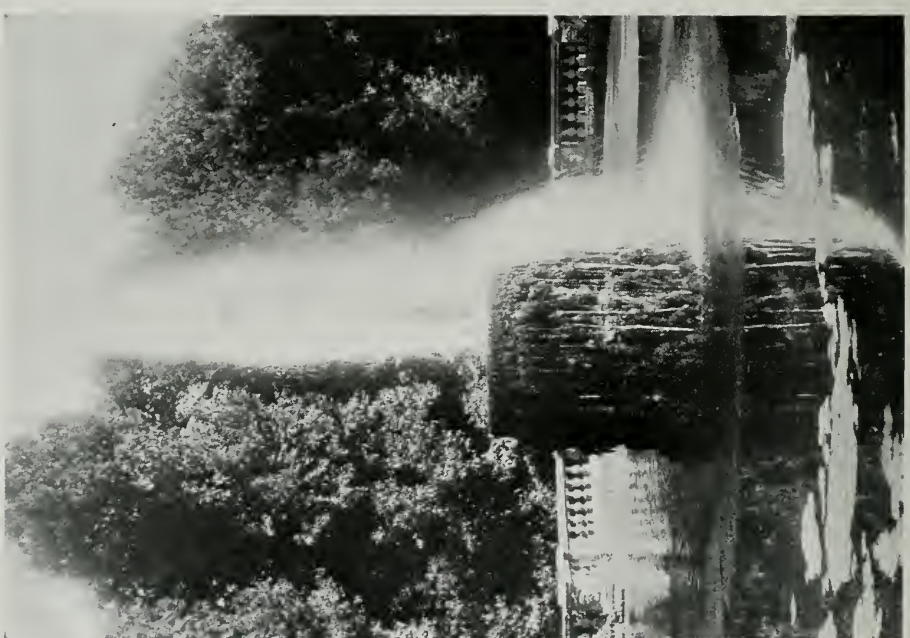
FOUNTAIN DEI FIUMI IN THE PIAZZA NAVONA, ROME

show excellent garden architecture. In all of them may be seen much that does not reflect glory on the Baroque architects, vulgarities and eccentricities that are inexcusable. We must bear in mind, however, that Italian Garden craft evolved about the time that the Baroque influence began.

The same thing may be said of the numberless fountains that are scattered so profusely about Italy and especially along the sun-scorched streets of Rome. No city anywhere has more of them and no city needs them more. Credit for most of these must be given to the seventeenth century Popes and their architects. Each new pontiff endeavored to surpass his predecessor in the size and magnificence of the aqueduct he brought into the city. The huge Aqua Paola on the Janiculum is the largest of these; it was designed by Domenicus Fontana and finished by Maderna in 1612.

The Fontana di Trevi, the work of Ferdinand Fuga, is so fine and

CASCADE IN THE VILLA LANTE, AT BAGNAIA;
USUALLY ATTRIBUTED TO VIGNOLA



FOUNTAIN IN THE VILLA TORLONIA,
AT FRASCATI

FOUNTAIN IN THE CORTILE OF THE PALAZZO VECHIO

so much bolder in its style than suggested by its date (1735-62) that it is sometimes attributed to Bernini. It is built of Travertine stone and when first planned, permission was actually secured to use the stone contained in the tomb of Cecilia Metella, which had already had a narrow escape, and which was only saved now by violent resistance on the part of the people of Rome.

Bernini was the designer of several fountains that are objects of interest to the tourist. The principal ones are the Fontana dei Fiumi in the Piazza Navona, the Acqua Acitosa, the group known as "La Barca" in the Piazza di Spagna and the Fontana del Tritone in the Piazza Barberini. Symbolical figures arranged with a great deal of vigor and executed by different sculptors distinguish the first of these.

Similar to the Fontana del Tritone are the fountains by Giacomo della Porta, the Paola in the Piazza della Verita, and the Tartarughe. These are more sculptural than architectural and represent very graceful treatments for isolated fountains in open squares.

Many of the private palaces had in their courtyards and gardens treatments of another kind. Water was introduced in front of a wall surface and a different principle was involved. The famous Pitti Palace in Florence had, for instance, in the Boboli Gardens connected with it, many fountains, the designs of Buontalenti and Il Tribolo, who prepared the garden scheme jointly in 1549. The fountain by Ammannati, illustrated on another page, is at one end of the piano terreno of the palace itself, and is of the same school as Vignola's works.

About twenty miles north of Naples is the vast royal Palace of Caserta, bearing a similar relation to its larger neighbor as Versailles does to Paris. In 1752 Luigi Vanvitelli began his grandiose scheme that developed into the elegant architectural display that is now in existence. The palace forms a rectangle 600 feet by 800 feet, built around four quadrangles. On the south is a colonnade containing extensive stables; on the north are the gardens and a great cascade that extend the line of the axis upward for about two miles to the peak of the adjacent hills. The palace building is far less Baroque in character than the gardens, with its cascade containing numerous white marble figures. This statuary lacks the interest of connected architectural treatment and consequently suffers a loss in artistic value. Even so, the haphazard placing of these figures in natural poses in the formal pools of running water forms a scene of magnificent grandeur that is comparable even to the effect achieved at Versailles by Andre.

The plans of most of the Baroque gardens and fountains of Italy are worthy of high praise, but in many cases the details are too complicated, and the ornamentation either too trivial or too cumbersome. There is oftimes a want of harmony between the landscape and the treatment of the gardens, and the fountains seem tawdry when compared to the works of the great cinque-cento architects. Too many of the details are almost puerile—as in the case of the Villa d'Este, with its toy model of an ancient city, thought to be Rome—but even the most tawdry of these treatments have a certain charm.

* * * *

The Master Builder

The Jerry Builder, recites the Western Canada Contractor, took a friend to see a row of houses he had just erected. The friend took up his position in one house while the builder went next door.

"Can you hear me, Bill? he inquired through the dividing wall.

"Yes," was the answering whisper.

"Can you see me?"

"No," was the reply.

"There's walls for you," replied the proud builder.

* * * *

Selling to the Meanest Man

A resourceful young salesman tried to sell an electrical washing machine to the meanest man in the world. His sales argument was that it would save the housewife.

"My wife's able-bodied and can stand lots of work," the sales prospect retorted. "That's why I married her—because she is a good worker."

"Then for goodness sake," suggested the smart salesman, "why don't you give her the tools to make it possible for her to accomplish still more work for you?"—Nation's Business.

Woman Architect Speaks Her Mind*

By ALICE WALTON, in The American Architect

THE architectural profession, or at least that portion of it able to publish its opinions, has been greatly agitated lately on the question of artistic education of the masses to a point where they will appreciate good architecture, though not necessarily pay for it. In their generous enthusiasm architects have given prodigally of their time, skill, talent and money. No emancipated flapper ever demanded or received more attention than the small house is getting these days.

In addition to the altruistic architects, every woman's magazine, every garden magazine, every newspaper, every building material company, every real estate board, every one who wants to give away something someone else has done, in the furthering of his own interests, is on the harassed trail of the small home owner and determinedly and insistently forcing good or better architecture on his reluctant contemplation.

I am beginning to wonder if some of these architects are not feeling like the hen that sat on the serpent's eggs.

It is an unfortunate fact that every accomplished reform brings with it some new tribulation to offset its benefits. Prohibition, the beleaguered, brings with it the aristocracy of the bootlegger and his family; the abolition of slavery brought the pleasant necessity of having to draw your little Ford to one side of the road while the wife of the Pullman porter sweeps by in her limousine; the emancipation of women brought the lipstick and nude stockings; the widely—not to say wildly—advertised interest in home building and better homes brings the speculative builder.

Of course, it is beneath the dignity of a successful architect, under ordinary circumstances, to worry over the ones who are being supplanted by the speculative builders; but the very sharp kick in the point is that the lesser architects, deprived of the natural outlet for their talents, are invading the fields of the successful, and, by cutting fees, are getting away with business they would not once have attempted.

One architect of my acquaintance, who, five years ago, turned up his classic nose as high as it would go at the mere mention of anything other than a large commercial building at six per cent, has not had a job in over a year. The "cut rate boys" have taken them all away from him.

Time was, when I was a very young and innocent draftsman, that the noble profession of architecture was looked upon with respect. The builder took orders from the architect, with more or less meekness, regardless of his feelings. Conditions are reversed now; the architect takes orders from the builder. The speculators, risen now to the dizzy heights of city builders, at least that is the way our leading news sheet so described them in a recent eulogy, are kindly recognizing the profession of architecture to the extent of declaring in the lurid advertisements of their wares, the fact that the building was "designed by an architect" and, I must say, the architects, generous creatures, must be deeply gratified to see the increasing excellence in the designs of sale houses. Many of them have a great many extremely good lines, not

*EDITOR'S NOTE—Miss Walton's criticisms, comments and deductions have been set down in a way that every architect will readily understand. Is her experience the exception in the smaller communities, or does it find parallel in other cities throughout the United States? The opinion of our readers is invited and author's names will be omitted by request.

to say a "superfulity" of good lines. I started to write superfluity, but the other word seemed to fit so very much better.

Our town is, I believe, a typical town. It is a community of a little more than half a million happy, money-chasing souls. It has some very bad qualities (mentioned especially at election time) and some very good qualities, mixed in about the proportions usual in most towns, regardless of the claims of the Chamber of Commerce. What we do here is happening in hundreds of other towns all over the country, except in some portions of the haughty East, God's country.

Shortly after the close of the latest unpleasantness some one started the rumor of a building shortage, and every one who could rake up two extra dollars started out to remedy matters immediately and at once. But, though building has been at fever heat ever since, a toadstool growth that has swept over the city like a blight in a quince orchard and doesn't seem to know it is time to stop, there is not enough architectural work to keep fifteen good firms really busy, and there are listed in the telephone book seventy-eight firms practising or trying to practise this profession, besides the Lord knows how many not listed.

Practically all of the apartment houses, hotels, shops and business buildings, as well as most of the houses both large and small, are in the hands of speculators, many of whom have, through shoddy construction, waxed fat and prosperous, extremely prosperous. Few of these builders ever employ an architect, never one of any standing, and never at the ethical fee or anything approaching it.

Not long ago, one of the most successful of this go-getter type of speculator had a very large tract of ground he wished developed with apartment hotels and apartments. The weary brain of his "architect" evidently must have refused to function satisfactorily, so, with the idea of getting a lot of information and suggestions he would not have to pay for, he staged a competition for the best solution of this extremely difficult problem. The first prize was five hundred dollars; a thousand dollars more was divided into several smaller prizes. The drawings called for required a good deal of time and study and expense in their preparation and the contestants were most emphatically informed that the winner was in no way assured of being awarded the contract, but, I am ashamed to say it, most of the leading architectural firms of the city, and we have some really good ones, entered this competition.

Another of the go-getters, who always advertises his "architect" extensively, once said to me, "Do you think I am going to let any architect tell me what I can do? I know my buildings violate the ordinances, but what of it? If they did not, I could not meet the prices of my competitors, and that is not going to happen as long as I know a few aldermen." This is their spirit, and yet, I have recently noticed a number of architects who once would not have considered such a thing for a moment, now allowing speculators to advertise them as "their architects." Others allow their draftsmen to work for speculators on the side. Still others, the strugglers, are seeking this class of work in the hope it will "give them a start."

The A. I. A. is recognizing the increasing need of the most show for the least money and is cutting down the cost of its membership and emphasizing its willingness to allow architects to get business on a price-cutting basis and still remain in good standing as members of the Institute. The A. I. A. has been very much interested in getting cheap plans to the public, and I believe the results of its efforts are already showing strong.

In getting cheap drama (the movies) to the masses, the legitimate drama is fighting for its life, with small chances of recovery. I believe the radio, as it is now used, will do more to cheapen and degrade the national taste for music than any other thing, for no one ever yet had his appreciation of the worth of a thing increased by having that thing given to him at cut rates. Furthermore, the way the architects are cheapening their work is simply undermining the foundations of the structure in which they live. To stretch the figure a little, they will soon be in the delightful position of the mother spider whose children devour her; but, of course, their altruism will not allow them to object to emulating the spider martyr, nor need they worry about what the speculators will do when they have passed on. There will always be other excavators and other mother spiders to take their places.

History relates that architects once were slaves. It looks as if history were going to repeat, and as if architects would go the way of the disappearing dressmaker and all of our buildings be "ready mades."

* * * *

Seattle's Electric Heating Era

A RATE for electricity in Seattle, Wash., of 1 cent per kilowatt-hour, recently put into effect, marks the beginning of a great era of electric heating, according to the 1924 report, just received, of the Seattle, Wash., Department of Lighting, Mr. J. D. Ross, superintendent. According to the Department, there are now about 200 houses electrically heated in Seattle, 150 of which have been connected in the "last ninety days." One firm alone has commenced building 300 electrically heated homes.

There is about 4000 K. W. used in the 200 homes and another 2000 K. W. in reflecting heaters scattered throughout the city. There are about 1000 water heaters using, in summer, about 3000 K. W. About 30 K. W. per day is now being connected for water heaters alone.

The Department is encouraging the use of water heaters, but though very desirous of the load, is leaving the decision on the use of electric heat to the customer, believing that unless there is current available for all, it is impossible to guarantee perpetual service. In the meantime, the heating load is doubling every few months and, the report states, could easily be increased to enormous proportions so fast that it could not possibly be cared for with the present plant.

The Department's view of the matter is that if the city's vision could be turned to the development of large power units in time for the demand, the city could have electric heating for many years to come. The antagonism of the power companies, it is claimed, who themselves will not develop power unless immediate dividends are in sight, are largely responsible for the delay in financing Seattle's municipal system.

Seattle, according to the Department of Lighting, could easily use 200,000 H. P. for heating, which would heat about one-tenth of the present city. The Department's report goes into the possibilities in detail and concludes with the statement that "the delivery of current within the city of Seattle at 7.5 mills for heating is easily possible, and there need be no extra charge for this to the customer. His contract would call for a flat charge of $15.67 per kilowatt year, plus the kilowatt-hours used at 7.5 mills above the 25% load factor. The market for this power at this rate is practically unlimited. The rising price of fuel and low cost of operation make electric heating more eagerly sought each year."

Earthquake Resisting Foundations

By G. SIACCI, Civil Engineer,
EDWARD GLASS, Architect

Editor's Note — The authors of the following article, Messrs. G. Siacci, Civil Engineer, graduated from the University of Rome, and Edward Glass, Architect, from the University of Pennsylvania, have had a wide experience in building in earthquake countries.

The great bulk of work carried out by Mr. Siacci in Egypt and in Australasia made him known in those parts of the world as an expert in foundation work on difficult soils.

Mr. Glass, in conjunction with Mr. Thomas Smith, Architect, has designed numerous earthquake resisting structures in Guatemala. Some three years ago, Mr. Glass, at the invitation of Architects Meybeck and John Reid, Jr., gave a talk before the City Planning Section of the Commonwealth Club on security of buildings against earthquake shocks.

THE destructive effect of an earthquake is in direct relation with the intensity and duration of the movement caused by the convulsions of the earth. This movement is one of going and coming of masses, and is manifested by tremors or waves coming up to the surface of the earth after having traveled at a tremendous speed from great depths. These waves are undulatory in character and have one direction, which is mainly horizontal. The vertical component is comparatively small and can be neglected. Earthquake waves may rightly be compared to water waves as observed in a basin full of water, when shaken. The water crests are like the upheavels of the earth, but these occur only in places where the earth crust is of very poor cohesion.

It is not difficult to imagine what can be the effect of waves of this kind on a foundation merely designed to distribute the weight of the building upon the soil. Foundations so designed generally consist of individual footings placed under columns and walls, hardly connected together. The chances for the building to stand the shocks and vibrations lay principally on the strength and character of its foundation. It must be designed not only for its main purpose of distributing the vertical loads on the ground, but also to resist lateral shocks. Better than resisting, we would say: A foundation should be able to **absorb** the earthquake shocks. But the latter expression would, of course, involve the use of materials which we do not possess today. So we shall say that in earthquake areas, building foundations should be so designed as to possess the greatest possible capacity of **dispersing** the earthquake waves. It is obvious that the combination of the monolithic character with the highest possible degree of elasticity throughout are the first requisites. The second no less important requisite is uniformity, so as to obtain an equal resisting power throughout the foundation whatever shall be the direction of the earthquake movement.

The kind of foundation that in our opinion would answer these requirements is a **raft of reinforced concrete.** Its structure would be like that of a multiple and geometrical honeycomb with upright truncated cylindrical cells of a certain number of feet in height; the top and bottom of the structure to consist of two slabs properly reinforced in two directions and the thickness of the slabs to vary according to the upward and downward pressure. The shell of each cell or rib of the structure is to be about eight inches thick at the base and about four inches at the top, the reinforcement to be both vertical and spiral and the cavities to be filled with sand.

This structure can be made standard and typical for buildings of any magnitude and for soils of any bearing capacity by altering the general dimensions and system of reinforcement.

No consideration for concentrated loads is necessary for transmitting them through the piers to the soil below, as previous to the building of the raft, care should be taken to consolidate the ground where necessary.

The authors of this article are using this method in the design of two large industrial plants in the Southern part of California.

We do not expect that our typical foundation will be universally accepted, as architects and engineers generally insist on fundamental formulae more than theoretical considerations, or exhaustive and well conducted experiments, but we will be glad if the publicity given to our suggestion will induce others to work out this important problem along lines of their own personal experience.

The problem of course is of major importance and other articles on the subject will be very desirable.

* * * *

Architecture and the Machine

A RECENT issue of "The American Mercury" contains an interesting article by Lewis Mumford under the title "Architecture and the Machine" from which we quote the following extracts:

Foreign critics have sometimes hailed the triumph of engineering over architecture in America as an aesthetic achievement; but when one examines the matter a little one discovers that a good part of the aesthetic achievement is the result of excellent photographs, snapped in unusual positions, and so the triumphs turn out to be not quite so brave and formidable as enthusiasts make them out. If the modern factory is good to look at, so was the old New England mill; if the modern steamship gives aesthetic pleasure, so did the clipper. In point of fact, the effects of the machine upon the great run of our buildings have not been favorable to beauty or amenity; and if the engineer is steadily eliminating the architect from every province except the country-house, his success is mainly the blind result of economic forces over which neither engineer nor architect has any control. Building is the last province to be conquered by the machine; just as the architect himself is almost the last artist who retains a vestage of independence. To see what this transformation means we must recall what a building was internally before the coming of the engineer.

Up to the Nineteenth Century a house was a shelter and, frequently, a work of art. Once it was erected, however, it had few internal functions to perform: its physiological system, if I may use a crude and inaccurate metaphor, was of the lowest order. An open fire with a chimney, windows that opened and closed—these were its most lively pretensions. Palladio, in his famous little book on the Five Orders, has suggestions for cooling the hot Italian villa by a system of flues conducted into an underground chamber from which cold air would circulate, but this ingenious scheme was on the plane of Leonardo's flying machine—an imaginative anticipation rather than a project.

With the exception, indeed, of Wren's suggestions for ventilating the old Houses of Parliament, and Sir Humphry Davy's actual installation of apparatus for this purpose, it was not until the Nineteenth Century that engineers turned their minds to this problem. Yankee ingenuity devised central heating before the Civil War, and one of the first numbers of "Harper's Weekly" contained an article deploring the excessive warmth of American interiors. At one time or another during the century running water, open plumbing, gas, electric lighting, drinking fountains, and high speed electric elevators made their way into the design of modern buildings. In Europe these changes came reluctantly, because of the existence of vast numbers of houses that had been built without a mechanical equipment; so that many a student at the Beaux Arts returned from an attic in the Latin quarter where water was

carried in pails up to the seventh story to design houses in which the location of labor-saving devices became an essential element in the plan. It is only during the last two decades that the full effect of these renovations has been felt, even in America.

A further effect of the machine process on the internal economy of the modern building is that it lends itself to rapid production and quick turnover. This has been very well put by Mr. Bassett Jones, in an article in the "American Architect," which is either a hymn of praise to the machine or a cool parade of its defects, according to the position one may take. Says Mr. Jones:

"The writer well remembers the late Douglas Robinson when outlining the location and property to be improved by the construction of a building some twenty years ago ending his directions with the proviso that it must be 'the cheapest thing that will hold together for fifteen years!' When the amortization charges must be based on so short a period as this, and with land taxes constantly increasing, it becomes obvious that construction must be based upon a cubic foot valuation that prohibits the use of any but the cheapest materials and methods."

With the features that govern the construction of the modern building thus conditioned by external canons of mechanism, it follows that purpose and adaptation to need play a smaller and smaller part in the design, and that the aesthetic element itself enters only by accident.

In this bare mechanical shell there is precious little place for architectural detail. Our first skyscrapers were designed by men who thought for the most part in terms of established architectural forms: Burnham and Root's Monadnock building in Chicago, which has exerted such a powerful fascination over the new school of German architects, was an almost isolated exception. The academic architects compared the skyscraper to a column, with a base, a shaft, and a capital; and they sought to relieve its empty face with an elaborate modeling of surface, like that of the old Flatiron building. Then the skyscraper was treated as a tower, and its vertical lines were accented by piers which simulated the acrobatic leap of stone construction: the Woolworth tower and the Bush tower were both designed in this fashion, and, in spite of numerous defects in detail, they remain perhaps the most satisfactory examples of the skyscraper that we have.

But neither column nor buttress have anything to do with the internal construction of the skyscraper, and so, following the veracious lead of the late Louis Sullivan, the buildings of the machine period have accepted the logic of the draped cube, and the only features of traditional architecture that remain are the ornaments that cling to the very highest and the very lowest stories.—Pencil Points.

* * * *

No Wage Increase Likely

That there is little likelihood of increased wages among the building trades in Portland, Ore., and vicinity was the consensus of opinion of Portland contractors who gave their views on the survey report for S. W. Straus & Co., of New York, which holds that the present period of rising wages in the building industry throughout the nation is at an end.

* * * *

Incomplete Bid

A careful contractor bidding in competition with a number of fly-by-nighters, rushed into an architect's office to explain that he had forgotten to submit all his bid. "The bid I sent in didn't include brick work, plastering and cement," he exclaimed excitedly. "Oh, that's all right," said the architect, "you weren't low anyway."—The Constructor.

Color in Its Relation to Architecture

By A. ASHMUN KELLY, in Building Age

EXAMPLES are not infrequently met with that afford one ample evidence of the fact that color has an important bearing on the matter of architectural effect, for no degree of perfection in the form can avail when that form is presented to the eye in unattractive coloring.

Indeed, it may be said that color is the life and soul of the form.

The popular impression seems to be that the choosing of paints for the coating of a residence is simply a matter of personal preference or taste, and it is this that in nearly all cases of bad coloring leads to the evil.

Today color is taken into consideration with fine critical appreciation by our builders and architects, and the advance made during the past forty years or so in house decoration with color is worthy of note.

One has only to look back to the days of the English or Queen Anne color schemes to realize how considerable and important this advance has been.

True, taste is a large element, perhaps the chief element, in the decorating of the exterior of a house. But there are certain fixed rules that govern the matter, and that are like those governing construction.

For example, there is the location to be considered, and the surroundings, immediate and remote. The house surrounded with trees and shrubbery demands different coloring from the house that is not so encompassed, but that stands out bare and open to the view.

Then there is the style of architecture. Color that would appear ideal on one form might look unsightly on a dissimilar form.

There are a few colors known technically as "safe", they being generally adapted to all forms of structure and to its surroundings. They are safe because the effects produced by their use are not precisely ugly nor quite inappropriate. These colors are mainly the reds, white, the grays, yellow and brown.

For an irregular, nondescript form of house, whose style of architecture may be termed unattractive, the grays and browns do very well; but the gray should be of the yellow cast, rather than the colder shade.

For the country house white is standard, for it shows up well in the distant view, whether surrounded with a summer environment of trees and shrubbery, or in winter, amid bare-limbed trees and leafless smaller growths.

The old stone farm house was at first kept white with lime wash, but in later years the custom has been to use yellow, and now there is a disposition to return to the original scheme, and there is no doubting the improvement made over yellow and other colors previously employed.

The low-lying, squatty house calls for light or cheerful colors, and such colors tend to increase the apparent height of the structure. The use of dark colors would have the opposite effect.

The Colonial style is patterned after the fine old New England form, with, in some instances, modifications that are effective in that they tend to relieve the admitted monotony of the Puritan standard. This style should not be painted with dark or any pronounced colors, such as red, brown, etc. A pure white body nearly always answers, but in some forms of the Colonial a dark bottlegreen trim serves nicely with the white body.

An old frame or stone country house usually appears attractive with a white body and with green blinds and shutters. The trim may be done with almost any color. The green should be a medium or light

shade, rather than a dark or bronze. Doors will look well either white or grained to imitate oak.

Another scheme for the country house calls for brownish-gray body and white trim, with dark chrome green for the blinds and shutters, or a deep brownish gray.

It is almost a rule that any shade will do for the trim on a white-bodied house; say such **shades** of color as pea green, gray, light yellow, or a very light brown. The house done with these colors will always present a perspective, and its architectural beauty is enhanced thereby.

If the white has been used until a change is desired, and this will occur, the body of the house may be painted a warm drab, graystone, or medium drab, light bronze, or ivory white, with white or colored trim.

The writer bought a fine large frame country house early this year, the coloring consisting of brown and yellow shades, there being six distinct colors on the shutters! Both architectural style and coloring owed origin to the horrid example set by the Centennial Exhibition in Philadelphia during the summer of 1876. But we simply rubbed out the coloring by coats of pure white, trim and all, the only color appearing now being the medium chrome green on blinds and shutters.

Color fads or fashions are unworthy unless they obey the strict laws of good taste and color harmony, which the English style was far from doing. Plain color schemes are satisfying, as multicolor schemes certainly are not.

The style should be simple, and fit the style of architecture which it is designed to decorate. And the painted and colored house should fit in with its surroundings, so that it will appear to be a part of the landscape which it adorns.

We are to take as factors the trees and the shrubbery, or the absence of them, the distance from other buildings, and the color schemes of nearby houses. Also, as has already been pointed out, the style of the house must be considered.

Some houses must be painted white, trim and body, while others will show up better with colored trim with the white body, such colors as bottle green, light slate, medium drab, a drab produced with yellow ocher and black; a nice French gray also will do.

In any case, when the body is painted white it should be white, and not a little off color. Some white leads are not pure white; zinc white added to a lead will increase the brilliancy of the lead, without impairing its wearing qualities. Zinc white alone is too brittle.

Summer cottages are built for pleasure during a more or less temporary occupancy, hence should have a light and cheerful coloring. Dark color conveys the sense of weight and solidity, or strength, and is therefore unsuited to small structures.

A city house on a small lot, near a street, should be painted a quiet color with a dark trim. A light, airy house will look stronger if a dark color is used, unless the background is dark, when a light colored paint affords relief.

I have recently seen some Spanish-type houses whose attractiveness was largely due to the gaily colored awnings that covered the windows, which, combined with roofs colored vividly, produced a very pretty picture. There was one house the walls of which were stuccoed and colored dark gray, or battleship color. The trim was white, the roof blue tiled, and awnings striped blue and white. Still another handsome example was an orange-color stucco house with a red roof, the awnings being striped blue and orange; the trim was done in a red similar to that of the roof.

ARCHITECTS' PERSPECTIVE, PROPOSED NEW CITY HALL, LOS ANGELES CIVIC CENTER
John C. Austin, Albert C. Martin and John Parkinson, Architects, Associated
Courtesy Southwest Builder and Contractor

Los Angeles' New City Hall

PRELIMINARY plans for Los Angeles' new city hall have been prepared by a commission of architects composed of Messrs. John C. Austin of John C. Austin and Frederick M. Ashley, Albert C. Martin and John Parkinson of John Parkinson and Donald B. Parkinson, associated. The plans have been approved by Mayor Cryer's special advisory committee and the next move will be to secure the approval of the municipal art commission so there will be no delay when the final plans are submitted to the city council.

Preliminary plans show the main building 432 by 272 feet in dimensions, three stories and mezzanine with basement, and the principal front on Spring street. The architectural treatment of the building will be in the Italian Renaissance; ornamentation will be confined chiefly to the lower stories, the high central section being intended to give it a monumental character.

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ARCHITECTURE does express the life, the education, and the culture of the people as a whole. Buildings will be built substantially, durably, and beautifully, if the people wish, and just to the degree they wish. —D. Everett Waid, President American Institute of Architects.

TALL BUILDINGS

There seems to be no limit to the height of American buildings and while San Francisco is marveling at its 25-story Telephone building just completed, the large cities in the East are planning new structures twice its height.

In New York a contract for what is said to be the world's largest office building has recently been let. The structure will be 37 stories high, seven below street level and entire block bounded by Lexington avenue, Depew place, Forty - third and Forty - fourth streets, New York City. This remarkable structure is estimated to cost $19,000,000. It will have a rentable space of 1,350,000 square feet.

New York is also destined to have the world's tallest and largest hotel. This building, according to Mr. Oscar E. Konkle, president of the Realty Sureties, Inc., will be 800 feet high, or sixty-five stories, with 5500 rooms. Ten per cent of the profits will go toward missionary work since, according to Mr. Konkle, the hotel will be built out of his gratitude for his recovery from a serious illness. According to the announcement the hotel will cost $14,000,000, and will contain a dining-room seating 2000 persons, an inter-denominational church, a bank for missionaries, stores, a hospital and twelve roof gardens.

INDIAN INFLUENCE

An interesting thing about our Spanish architecture is the influence of the Indian workman, coupled with the traditions brought by the Spaniards. These Spanish settlers moved northward. In their company were the Franciscan Fathers. They built missions a day's journey apart, beginning a few miles below the present line between Mexico and the United States, and extended all the way to a point north of San Francisco. Many of these buildings are still in existence. They form our original tradition. It is true that even more than in Mexico their buildings were influenced by the labor as well as by the material used. The material was coarse rubble, when it wasn't mere adobe. The laborers were Indian converts, and everywhere you find, when you are anywhere near Aztec traditions among the Indians, the influence of the workmen who actually executed the work.

I am reminded of that early Renaissance attempt in France wherein one feels the remnants of Gothic by workmen who were unable to keep the Gothic touch out of what was intended to be an execution of Italian architecture.

Then in California we have the old, original "49" families, those people who were big and strong enough to have resisted the weeding out process of getting across the plains. They brought with them truly American traditions from all parts of the eastern coast and middle states.—Myron Hunt, A. I. A., Los Angeles.

AND who and what is the architect's best friend? In a word, the India rubber. This blessed little bit of India rubber signifies not only that, but the aspiration which refuses to be satisfied until perfection is accomplished; with that continual sacrifice of effort to perfection which is the mark of every true artist. You don't get paid for what you rub out. Keep on rubbing out until you do something that is worth being paid for.

MACHINE TO APPLY STUCCO

New devices and new methods of construction are continually being devised and offered to the building public as a more economical and better way of doing certain kinds of construction work. There was a time when any new device offered in the building line was immediately tabooed by labor, the fear being that it would take the place of man power and deprive some man or men of the opportunity to make a living. This fear as oftentimes expressed by the late Samuel Gompers was groundless and it has since been shown that every new device introduced in construction work has not only been a labor saver, but has at the same time made by its use a better and less costly job and been the means of increasing the particular kind of construction it was being used for.

The cement gun and paint spraying machines are two recent illustrations and now comes another innovation for the purpose of putting on stucco. The inventor thinks it is a great thing and so do all those who have used it. Just what the plasterer will do about it remains to be seen. The manufacturers of the machine predict that it will revolutionize the application of stucco in this country.

SHOULD ENGINEERS SOLICIT WORK?

Rules governing professional ethics are essential for the proper conduct of engineering but there must be reasonable latitude allowed in their interpretation. Hardly a meeting of engineers takes place in which engineering ethics do not come in for considerable discussion, and while the efforts to raise professional standards are commendable they should not be hedged about by regulations so rigid as to nullify individual initiative and eliminate the competition that is based on quality of service rendered. In too many instances there seems to be a tendency, when engineers get together, to draft an ethical code that is too arbitrary in its terms and calls for too strict adherence to its rulings.

Take the question of soliciting business, for example. There are engineers who denounce in no uncertain terms uninvited solicitation of professional engagements and many ethical codes have been drawn up with clauses expressing disapproval of any attempts to secure business until the engineer is approached first by the client. The same conditions at one time prevailed with the architect but no longer. The busy architect nowadays is the one who hustles for business. That there is difference in opinion on this specific question among the engneers, is indicated by a review of the replies received to a questionnaire sent out by the American Association of Engineers. Some well-known engineers of high professional standing feel that no special effort should be made to secure an engagement for a given work when not invited to do so, while others, of equally high standing, are inclined to believe that, as one engineer puts it, "the

I am a draftsman, have always been a draftsman, and wish to be a draftsman, and have from the bottom of my heart a contempt for an architect who is not a draftsman.
—Beresford Pite, R.I.B.I.

practice of a professional engineer involves a certain amount of business deportment and, consequently, unless an engineer either directly or indirectly places himself in a position where he will be invited or even go so far as to ask for consideration, he will find his professional business in a rather precarious position."

The majority of replies to the questionnaire took a middle course, however, by indicating that there is a line beyond which solicitation of professional work becomes improper. The need for a developed sense of discrimination to guide individual engineers in such matters was emphasized. The prevailing opinion was that limited approach is permissible, but that it should not go beyond making the engineer's availability known to prospective clients.

Commenting on the matter the Contract Record says:

"In our opinion, there can legitimately be a considerable measure of business-seeking without becoming involved in professional improprieties. Engineering is a business as well as a profession and as such is subject to more or less competition. This competition, however, should be directed along lines that lead to the selection of the best man or firm for the work. In other words, the competition should be in regard to the quality of the service rendered and not price. Price-cutting competition for professional services is detrimental to the professional and harmful to the best interests of the public, but on the basis of qualifications and service it is justifiable to go after business even without invitation."

"Overcoating" the Home

THE National Steel Fabric Company has undertaken to "put over" an "over-coat" campaign, which promises to be a humdinger, to use a slang phrase in sporting parlance. The use of the word "overcoat" should not be confused with that all important article in the clothing business. The mere mention of this word naturally suggests something warm for the winter months, but in the case of the National Steel Fabric Company the word "overcoat" applies to a new dress of reinforced stucco for the home. It is the company's idea to encourage and promote the use of handmade stone (stucco) not only in the construction of new houses, but in reclothing old ones.

Figures compiled by the research department of the National Steel Fabric Company, furnish rather startling information. For example: of the twenty-four million houses in America, eighteen million are of wood-frame construction. It is estimated it will take ninety years to duplicate this number of homes and in the meantime the existing market for a permanent paint or covering for these eighteen million homes must be taken care of. It is not difficult to realize the increased value of these eighteen million houses were each and every one to be overcoated. Averaging the cost of each at $5,000 (or ninety billion dollars) it is reasonable to assume that "over-coating" will increase this value fifty per cent or forty-five billion dollars — more than America's cost of the greatest war that history has ever known.

Among the reasons for overcoating are (first) it eliminates the need of a protection for wood; (two) it eliminates repairing; (three) is warmer in winter and cooler in summer; (four) lowers the cost of heating; (five) is fire safe; (six) it enhances the value of the home; (seven) it will save repairs.

History does not seem to record the earliest practice of the art of Stucco. We know that Stucco was used extensively in the Greek and Roman Empires. The Persians and the Moors, the French and the Italians, all realized its charm and beauty—from the coldest climates, to the hottest tropics, it has a universal appeal because it possesses in the highest degree the essential qualities of artistic effect, maximum economy, and greatest endurance.

Sacramento Bank Building

Architects Leonard F. Starks and Company of Sacramento have been commissioned to prepare plans for a Class A bank building, to be erected at 7th and J streets, that city, for the California National Bank, at an estimated cost of $300,000.

With the Architects

Building Reports and Personal Mention

News From Mr. Bonestell

The many San Francisco friends of Chesley Bonestell, formerly a member of the staff of Willis Polk and Company, will be interested to learn of his success as a color cartoonist for a big advertising firm in England. "Worth Getting," is the title of a clever picture by Bonestell which has been pronounced the best in a series of colored advertisements for Maison Lyon's Turkish Delight. Here is what Mr. W. Buchanan-Taylor, publicity manager for J. Lyons & Co., Ltd., wrote about the picture which was reproduced in a recent number of the Advertisers' Weekly and received in San Francisco by Mr. T. Ronneberg, structural engineer, and also at one time a member of Mr. Polk's staff:

The whole "atmosphere" is in keeping with the goods the picture sells. The old Turk slumbering in the sunshine, oblivious of the fact that mischievous boys are stealing his sweetmeats, is the central figure, but it will be seen that the perspective lines of the picture lead the eye inevitably to the dish of Turkish Delight.

The title, "Worth Getting," is "snappy" and convincing, and the Turkish rug at the foot of the picture was quite a happy thought.

Incidentally, my department may claim to have "discovered" Chesley Bonestell in this country. He came over not long ago from America and already has made a name for himself here. He has a vivid sense of color; he can present things pictorially in a new way, and his technique and draftsmanship are alike admirable.

War Memorials

Plans are in a progressive state by Architects Bakewell and Brown and G. A. Lansburgh of San Francisco for the proposed $2,000,000 opera house to be erected on the block bounded by Van Ness avenue, Franklin, Grove and McAllister streets, San Francisco. It is hoped to have this building completed for the opera season of 1927.

Messrs. Bakewell and Brown are also designing an American Legion building which will likewise be located in the Civic Center. This structure will cost $500,000. Bakewell and Brown have considerable other work on the boards including a four-story Class A office building on California street and Grant avenue, San Francisco, for the Hartford Insurance Company.

Concrete Apartment House

Plans have been completed by Architects Miller and Pflueger of San Francisco for a large two-story and basement, steel frame and reinforced concrete store and apartment building at Geary and Divisadero streets, San Francisco, for Mrs. Margaret Richardson. The building will cost close to $100,000.

Market Building

Plans are being completed by Architect S. Heiman, 57 Post street, San Francisco, for a one-story brick market building in Palo Alto for Mr. Albert Meyer, to cost $20,000. The same architect has completed plans for a one-story reinforced concrete market building to be built on Union street, east of Fillmore, San Francisco, for Messrs. E. Tropp and L. Dorphy. Mr. Heiman has also made plans for extensive alterations, including new store fronts, to the Class C brick store building at Kearny and Commercial streets, San Francisco, for Mr. S. Gurson.

Waikiki Beach Hotel

Plans have been completed by Architects Warren and Wetmore of New York City for the new Royal Hawaiian hotel at Waikiki Beach, Honolulu, and which is being financed by the Matson Navigation Company. It is announced that Thos. J. Coleman, manager of the Hotel St. Francis, San Francisco, is to be managing director of the hostelry. The Lindgren-Swinerton Company of San Francisco have been named as purchasing agents for the new hotel.

Planning Many Buildings

Architects Rousseau and Rousseau have reopened their offices in the French Bank building, San Francisco, having disposed of their property on upper Market street in the vicinity of Eighth street at a considerable profit. Messrs. Rousseau are now planning to develop that section of San Francisco bounded by Irving street, 11th to 21st avenues. Plans are being drawn for a number of buildings, including stores and apartments.

Six-Story Apartment House

Architect E. E. Young, 2002 California street, San Francisco, has completed plans for a six-story steel frame apartment house for Mr. W. H. Peaslee. The building will be located on Greenwich street and will contain 12 six-room apartments, the estimated cost being $150,000. Mr. Young has also completed plans for a $20.000 residence for Mrs. Sachs to be built in Sea Cliff, San Francisco.

Berkeley Stores and Apartments

Architect Leonard H. Ford, Coit Hotel building, Oakland, has completed plans for a three-story brick veneer store and apartment building to be erected on the east side of San Pablo avenue, south of Delaware street, Berkeley, for Mr. R. E. McMann. The structure will cost $65,000.

Santa Barbara Elks Building

The plans of the Santa Barbara Elks have been changed and instead of conducting an architectural competition for their new building, they have commissioned Architects John Parkinson and Donald B. Parkinson of Los Angeles to design the structure. The lodge expects to spend a quarter of a million dollars or more on the project.

Binder and Curtis Busy

Architects Binder and Curtis of San Jose have considerable work on hand, including alterations to the Security State Bank, which will cost $60,000; an addition to the San Jose Hospital to cost $50,000; a four-story addition to the Y. W. C. A. building to cost $130,000 and a new building for the Red Star Laundry, costing $25,000.

Palo Alto Country Home

Architects W. H. Crim and Hamilton Murdock, 425 Kearny street, San Francisco, have completed plans for a $25,000 home at Palo Alto for Mrs. I. W. Robbins. The house has been designed in the Colonial style and will contain fourteen rooms and three baths with detached garage and chauffeur's quarters.

Pacific Grove Hotel

Plans are being prepared by Architect George Rushforth, 354 Pine street, San Francisco, for a five-story reinforced concrete hotel at Pacific Grove for Mr. S. S. Parsons. There will be 100 rooms. The estimated cost is $200,000. Mr. Rushforth has recently completed plans for the new Trinity Methodist Episcopal church, Berkeley.

Berkeley Theatre

Architect Mark T. Jorgenson of San Francisco has completed plans for a reinforced concrete moving picture theatre for the Golden States Theatres Co., to be built at University and San Pablo avenues, Berkeley. The playhouse will seat 1400 and will cost $150,000.

Theatre and Office Building

Architect G. A. Lansburgh, San Francisco and Los Angeles, is preparing plans for a Class A office and theatre building for Warner Brothers. It will be built at Hollywood boulevard and Wilcox avenue, Hollywood, and is designed to seat 3000 persons. The estimated cost is $2,000,000.

Yosemite Park Hotel

Plans are being prepared by Architect Gilbert Stanley Underwood, I. W. Hellman building, Los Angeles, for a $300,000 hotel of 100 rooms; also cottages, having accommodations for 400 more persons, for the Yosemite Park and Curry Company. Construction of the hotel is scheduled to be completed by summer of next year.

Twelve-Story Apartment House

Plans have been completed by Architect C. O. Clausen, Hearst building, San Francisco, for a twelve-story steel frame and reinforced concrete apartment house to be erected on the south side of O'Farrell street, between Jones and Leavenworth, San Francisco, for Mr. E. V. Lacey. There will be one store and 47 two-room apartments. The building will cost $150,000.

New State Building

Plans are being prepared in the office of Mr. Frank G. White, chief engineer of the Harbor Commission, San Francisco, for a $200,000 loft building and warehouse to be built on the Embarcadero, south of Folsom street, San Francisco, and to be arranged for various mechanical units of the state.

Two Apartment Houses

Architect Smith O'Brien has prepared plans for two store and apartment buildings to be erected for himself and Mr. C. B. Hobson, on West Portal street, St. Francis Wood, San Francisco. The first building will cost $26,000 and will contain two stores, four three-room apartments and three two-room apartments.

Six-Story Loft Building

Kohler and Chase have commissioned Architects Meyer and Johnson of San Francisco to prepare plans for a six-story steel frame store and loft building to be erected on property recently purchased adjoining the Orpheum theatre on O'Farrell street, San Francisco.

San Jose Building

Architects Ashley and Evers, Holbrook building, San Francisco, are preparing working drawings for a three-story reinforced concrete store and loft mercantile building for the Trinkler-Dohrmann Company. The location is on South First street, near San Carlos, San Jose. The building will cost $15,000.

Store and Apartments

Mr. M. V. Brady, San Francisco contractor, has had plans prepared by Architect D. C. Coleman, French Bank building, San Francisco, for a six-story steel frame and reinforced concrete store and apartment building on the south side of Turk street, San Francisco.

Residence Contract Awarded

Architects Willis Polk & Company have recently let a contract to M. J. Murphy of Carmel to build a $70,000 country house at Hillsborough, San Mateo county, for Mr. Garfield D. Merner, 14 Montgomery street, San Francisco.

High Rating for Alarm System

The Butte Electric & Manufacturing Company (Paul C. Butte) has recently received a class "A" rating for its Federal bank vault local burglar alarm system. The system was tested for resistance to defeat, practicability, durability, reliability of operation, fire hazard and uniformity and workmanship and received a total credit of more than 1800 points, being the highest rating given to any alarm system of this character used for installations in banks. The class "A" rating entitles a bank to obtain 65% discount on burglary insurance premiums.

Felchlin Company Changes

The R. F. Felchlin Company of Fresno has recently opened offices in the Commercial Exchange building, Los Angeles. The company will still maintain a Fresno office in the T. W. Patterson building. The firm name has been changed from The R. F. Felchlin Company, to Felchlin, Shaw & Franklin, architects, engineers and managers of construction. Mr. Raymond R. Shaw will have charge of the Los Angeles office.

Richmond Hotel

Plans have been completed by Architect Jas. W. Plachek of Berkeley for a new hotel at Richmond to cost $200,000. Mr. Plachek has also completed plans for an addition to the Berkeley City Hall, to cost $20,000 and an addition to the Pacific Spring Bed Company's plant in Fruitvale to cost $50,000.

Alterations to Oakland Building

Extensive alterations are to be made the first of the year to the three-story store and loft building at Broadway and Twelfth street, Oakland, owned by the United Cigar Company. Architect Earl Bertz of San Francisco is preparing the plans.

Hospital Building

Architect R. A. Herold of Sacramento has been commissioned to prepare plans for an administration building and surgical ward at the County Hospital grounds, Sacramento. The Supervisors have appropriated $200,000 for the improvements.

Community Apartment House

Architects Weeks & Day are preparing plans for a fifteen-story Class A community apartment house to be erected on the southwest corner of California and Taylor streets, San Francisco, for the Huntington Community, Incorporated.

Recovering From Injuries

Mr. O. P. Shelley, vice-president of the Pacific Materials Company, is recovering from a severe injury received on Memorial Day when he fell from the roof of his garage in Berkeley.

Architect Smith Busy

Architect W. Wellington Smith, formerly of Butte, Montana, has moved his office from 1145 American avenue, Long Beach, to 1242 Keniston, Los Angeles. Mr. Smith reports that plans have just been completed by him for a Labor temple to be erected in Long Beach for the Long Beach Union Labor Temple Association and to cost $100,000. It will be 70 feet by 100 feet, three stories and basement, and construction will be steel frame and brick walls trimmed with terra cotta. Other work includes a frame stucco residence to be built in Hollywood for Mrs. Fannie Tanenbaum to cost $20,000, and a four-story business block and apartments on East Seaside boulevard and Linden avenue, Long Beach, for the Seaside Holding Company to cost $90,000.

Personal

Architect Charles Peter Weeks of Weeks & Day, San Francisco, has not been at all well of late, and by advice of his physician has gone to Arizona for a month or two. Mr. Day recently returned from a short vacation in Honolulu.

Architect William Skidmore announces the removal of his office from 420 Lissner building to 1134 Wilkins avenue, Los Angeles.

Architect E. C. Thorne has moved his office from 620 Western Mutual Life building, Los Angeles, to suite 414-15 in the same building.

Architect Clarence Tantau has moved from 251 Kearny street, San Francisco, to the Shreve building. Mr. Tantau is busy on plans for the new Monterey Peninsula Country Club house at Pebble Beach, construction of which will start in January.

Architects Russell & Alpaugh have dissolved partnership. Mr. Norman W. Alpaugh has established his office at 303 Parkview building, 2400 W. Seventh street, and will be pleased to receive catalogs and samples of building materials and appliances for his files. Mr. C. H. Russell will continue the offices at 1106 Story building.

Architect W. Douglas Lee has moved his office from 401 Sun building to the seventh floor of the Textile Center building, Eighth street and Maple avenue, Los Angeles.

Mr. Arthur H. O'Brien, architectural engineer, has moved his office from 1020 Rives-Strong building to 6667 Hollywood boulevard, Los Angeles.

Architect Geo. W. Ritchie has moved his office from 2404 W. Seventh street to room 406, 2410½ W. Seventh street, Los Angeles.

Architect Ralph C. Flewelling has moved his office from 1218 Taft building to 423 Camden drive, Beverly Hills.

Better Library Service

Marked progress in the development of library service to engineering is indicated by the second nation-wide survey of special and technical libraries recently completed by the National Special Libraries Association. Almost twice the number of collections of engineering literature were enumerated and in addition there were many more libraries in such special fields as Aeronautics, Bridges, Building, Cartography, Chemistry, Electric Lighting, Explosives, Fire Protection and Flood Control.

Among the engineering libraries included are those of the Aberthaw Construction Company; Day and Zimmerman; Engineering Societies Library; Fay, Spofford and Thorndike; Ford, Bacon and Davis; General Motors Research Corporation; Grinnell Company; Jackson and Moreland; Massachusetts Institute of Technology; Metcalf and Eddy; Stone and Webster, and many university and local engineering society libraries.

The results of the survey have been published in the form of a national directory of special libraries, compiled by May Wilson, Librarian of New York Merchant's Association and edited by Rebecca B. Rankin, Librarian of the New York Municipal Reference Library. An interesting introduction is contributed by John Cotton Dana, Librarian of the Newark Free Public Library.

The directory describes American special libraries and lists them according to general subject covered. It reveals a wealth of specialized information sources on every subject from Advertising to Acoustics; from Banks to Bibliography; from Debts to Duralumin; from Earthquakes to Eugenics; from Factories to Folklore; from Gas to Geophysics, and from Plumbing to Personnel Administration. Ready reference is facilitated by means of title, subject and geographic indexes. Copies of the directory may be purchased from Gertrude D. Peterkin, Treasurer of the Association, Room 2513, 195 Broadway, New York City.

One-Man Bag

A Philadelphia concern is placing on the market a bag of webbing and canvas which is stiff enough to stand alone as firmly as a box or can and remain open while being loaded. This bag is strong enough to permit of its being dragged over rough ground when filled with rock or metal objects and at the same time is collapsible so as to be readily stored. The fact that the bag stands upright and stays open makes it possible for one man to handle it in loading, instead of a helper being required to hold the bag open while the load is shoveled in. The bag is sufficiently rigid so that the loaded bags can be transported on trucks or flat cars without the contents spilling.

BOOK REVIEWS

Edited by
CHARLES PETER WEEKS

"Modern Practice in Tank Protection" by R. H. Hubbell; published by Hill, Hubbell & Co., 115 Davis street, San Francisco. Size 8½x11 and 27 sheets. For free distribution.

Here is a book containing a fund of valuable information that has never been gathered before, on the subject of tank protection through painting.

It carries through to a logical degree the modern tendency toward specialization. Its wide scope of usefulness is well indicated by its chapter headings, viz: "Acid Tanks," "Brine Tanks," "Concrete Tanks," "Expansion Joints," "Oil Storage Tanks," "Tank Cars," "Tank Steamers," "Water Tanks," "Principle of Painting Iron and Steel" (on tanks and steel surfaces of any kind).

As the preface informs us, "Modern Practice in Tank Protection" embodies a generation of experience in meeting difficult paint conditions on the part of its publishers, Hill, Hubbell & Co., technical paint specialists, with headquarters in San Francisco.

The extent of their reputation is apparent upon leafing through the pages of this handbook. It appears that during the four years of the shipping boom, from 1916 to 1920, they treated the tanks of 544 steamers, including many of Uncle Sam's fighting ships.

The book was written by Mr. R. H. Hubbell, and deserves credit for subordinating the mercantile aspect of the data to the evident purpose of producing a handbook of genuine helpfulness to editors, busy executives and technologists interested in "tankology."

English Furniture at a Glance—by Charles H. Hayward; 100 illustrations from drawings by the author. Published by G. P. Putnam's Sons, 2 West 45th street, New York. Price $2.50.

The book is mainly a review in pictures of the origin and evolution of period furniture from the sixteenth to the eighteenth centuries. The illustrations are excellent and should be of great assistance to architects and interior decorators in familiarizing themselves with the now very popular Period Furniture.

English Architecture at a Glance—by Frederick Chatterton; with historical notes by Frederick Chatterton. Published by G. P. Putnam's Sons, 2 West 45th street, New York. Price $1.75.

This is a simple review in pictures of the chief Periods of English Architecture, with valuable historical notes by Frederick Chatterton. There are over 90 pen and ink drawings on 37 plates, all especially prepared by J. D. M. Harvey. The book should be in every architect's library, particularly those who specialize in English architecture.

A Short History of the Building Crafts—by Martin S. Briggs, F.R.I.B.A. Published by the Oxford University Press. 250 sketches illustrate the text. Price $3.50 net.

It has often been said that, in writing the history of architecture, too little attention has been given to the materials and the craftsmanship which brought into being the great masterpieces of the past. As this book is intended to link ancient architecture with modern building construction, and to show architect and craftsman alike how building work was done long ago, the various "trades" or crafts of brickwork, masonry, concrete work, carpentry, joinery, ironwork, slating and tiling, plastering, plumbing and glazing, are historically treated in successive chapters. At the beginning is a brief general sketch of the position of architects and craftsmen in the past.

The Story of Sani Onyx, published by the Marietta Manufacturing Company, Indianapolis, Ind. A 24 page book, handsomely illustrated and containing interesting facts about a product that is advocated in place of marble and tile for hospital installations.

Sani Onyx is made of rock ingredients, fused at 2600 degrees Fahrenheit. The natural, fire-polished surface is uniform and as smooth as glass, will not stain or discolor, nor is it affected by warmth, moisture or salt air. Wherever sanitation and cleanliness are desirable—and in every hospital these factors are of paramount importance — Sani Onyx is recommended.

Valve Company Expands

The Schroeder Flush Valve Company has consolidated with the Public Service Brass Corporation, Huntington Park, Los Angeles, and has moved all of its equipment and stock from the old address, 1302 North Main street, to 721 East Slauson avenue, where all inquiries and orders will be given prompt attention. This company has done a remarkable business since its inception and architects who have specified Schroeder valves report that they have given excellent satisfaction. The company's sales in the San Francisco territory have doubled the past year.

Elks Club Pumping Equipment

The Simonds Machinery Company of San Francisco will supply for the new million dollar Elks building in Sacramento, designed by Mr. Leonard F. Starks, architect, through Hately & Hately, two 1-inch Type HM, American-Marsh, hot water circulating pumps and one 2-inch Type HM, American-Marsh, brass-fitted, circulating pumps for the swimming pool, and through Luppen & Hawley of Sacramento, two 2-inch Type JJM, American-Marsh centrifugal pumps for bringing the city water pressure to the roof of the building.

Built-in Fixtures Popular

The Built-in Fixture Company of Berkeley recently held its sixth annual stockholders meeting. The report of President O. K. Brown showed a prosperous year just closed. The company is in a flourishing condition and has already outgrown its San Pablo avenue factory, which has been built less than three years. The company's product is now being distributed throughout the United States and new agencies are being established as the business expands.

Speaking of Mr. C. R. Cox, who founded the business in 1912 in a small shop in Berkeley, Mr. Brown took occasion to compliment the inventor in the following somewhat original but nevertheless truthful manner:

"Inventors are often referred to as 'visionary.' They are. Without vision there would be no invention worth while, and very little progress. Some people call them 'cranks.' They are. But did it ever occur to you what a crank does? It turns something. It is now our turn to turn these inventions into useful articles, and these articles into money, and the money into dividends."

Enlarges Fence Department

Mr. F. H. Skellenger has become associated with the Michel & Pfeffer Iron Works, Harrison and Tenth streets, San Francisco, to accept the management of the fence department. Mr. Skellenger has been associated with the construction industry in San Francisco for many years.

With experienced crews, Mr. Skellenger will handle the all-purpose Page Protection Fence, manufactured by the Page Steel & Wire Company of Bridgeport, Conn., and for which Michel & Pfeffer are the sole distributors in Central and Northern California. The fence is adapted for use as a protection unit for small and large gardens, lawns, tennis grounds, sport fields, estates, institutions, factory yards and interior department panels.

Extends Business Activities

Mr. Eri H. Richardson, of San Francisco, designer and builder of tile fireplaces, fountains, store fronts etc., is spreading his activities by creating a new department to be known as the "Heating Division".

Mr. Richardson has the agency for the Ward floor furnace and is now opening negotiations with other manufacturers to secure lines for sale in the San Francisco district.

Manufacturers interested are invited to communicate direct with Mr. Richardson at the Building Material Exhibit, 77 O'Farrell street, San Francisco.

A Grading Contractor Must Know His Costs

By H. G. WORSHAM, A. G. C. A.

TO start with, I believe that you will admit that there are several things that are wrong with the contracting game. When we look around at other lines of business and see them in operation year after year, and each year making a profit, regardless of whether it was a rainy or dry year, or other adverse conditions, and then consider the contracting business in comparison, we wonder why it is that this particular line fares so badly with "Old Man Profit."

We know of no other business with the possible exception of farming, which requires a man to work from daylight to dark at top speed to make a living, but even with doing this, the contractor instead of making a living, usually winds up by spending what capital he might have had to start with, and in addition is unable to settle with his creditors. There is no logical reason whatever why a contractor who works as hard as is their custom, shouldn't wind up at the end of each year even with the world, and with a nice bank balance in remuneration for his services during the past season. How many constructors can you point out to me who do this? I know that the amount is very small in comparison with the total number of contractors.

There must be some reason for this almost universal condition among contractors. There certainly is. The reason, as we figure it out, is that a contractor, simply guesses at the price he should bid on a job in order to pay all expenses and have a profit left over, and guesses too low 99 times out of a hundred, instead of knowing how much per yard he must get in order to make all expenses, and then adding a little for the profit. We know you cannot dispute the fact that if your price per yard will bring you in enough money to pay all expenses and have some left over, that at any time if you wish to retire from the constructing game, you could sell or give away your outfit, have all bills paid, and still have the accumulation of profits of the years you have been working to live on.

This is so simple, isn't it? How many contractors do you know who could retire today with enough to live on for the balance of their lives? Men in other lines of business do this, and they haven't worked near so hard as you have. You have been all wrong in the way you have figured the cost of moving dirt. During the past years you have taken contracts on which you thought you would make a profit, or hoped to make a profit, but in the end you have wound up with not only not making a profit, but have lost what you had to start with, "if any," and have not met your bills as you have gone along. I say the reason for this is that you have guessed all along on the cost per yard of moving dirt, instead of knowing the cost per yard.

Don't say that there is no way for a contractor to figure how much it will cost to move a yard of dirt because there is. Because one job can be moved more easily than another is no reason why you should condemn a system of figuring the cost per yard. The difficulty of moving dirt on a certain job, or the ease with which it can be moved on another, doesn't throw a monkey wrench into the machinery of figures, it simply governs the amount of yards that can be moved in a given time, be it day, month, or year.

We will take for an example, a one-machine outfit. Your outfit may be smaller or larger. It makes no difference; the principle of figuring the cost of moving dirt is the same, and the cost of moving dirt with your outfit can be figured in the same manner.

You have a certain amount of money invested in equipment such as horses, harness, elevating grader, wagons, tents, small tools, etc. They all represent an investment of so much, whether they have been paid for or not. If you haven't paid for all the outfit, you will have to pay for it eventually, and the chances are you are paying a pretty good rate of interest on those items which are not paid for.

Now we take the item, horses. You will have a certain number of horses lost by death each year. Some years more than others perhaps, but each year some, and there must be an average number lost in this manner per year. You will have a certain amount of sickness in horses. They must be doctored and doctors' fees paid. In other words the horses are "repaired." They grow old and have to be replaced. It is true there is a salvage on a worked-out horse, but the salvage price is not nearly as much as the original cost. So here is another loss. Now if we take a four-year period and add together the value of the horses lost by death, the vet's fees and the amount of loss by replacing the old horses during this period with new ones (the difference between cost price and salvage allowance) you will find that the sum of these expenses (deaths, vet's fees, and loss by replacement) will equal the original valuation of the horses. Therefore, in four years' time the price of the horses has doubled itself, or you have lost their entire original value. So in one year you have had a depreciation of 25 per cent.

By following out this same line of reasoning with the rest of the equipment you will find that you have an average depreciation on the entire outfit of about 35 per cent. This is just as much ex-

pense as is the pay roll and must be figured in as part cost of running outfit for 12 months or 1 year.

Now if you have not the horses, grader, etc., paid for, you have to pay at least 6 per cent interest on the cost of them. If you have them all paid for your money which you have invested is worth 6 per cent and this should be figured as a part of the cost of operating 12 months. If you didn't have your money in a contracting outfit, you could put it in bonds and it would earn 6 per cent without your having to work from daylight to darkness. Therefore, I again say that you must figure 6 per cent of the value of your outfit as an expense.

You have certain other expenses which are fixed, regardless of whether you have a contract, whether it is bad weather and you can't work, or whether you are moving from one job to another. You know you have to feed your horses 365 days in the year. Figure the cost of feeding one horse one day. If you have 60 horses, it is easy to figure the amount it costs to feed them each day. Then you can multiply by 365 and you have the cost of feeding them for 12 months. You have certain men that you pay by the month, such as superintendent, engineer, cook, etc. Take into consideration their board and figure the amount that they cost you in one year's time. You have certain administrative expenses, such as: office rent, commissary man, traveling expenses, hotel bills, etc. Figure up what this class of expense costs in one year. Now total up all these costs, the depreciation, the interest, the horse feed, the salaries of men paid by the month, the administrative expense, and you will get the fixed expense for one year. Now this expense goes on regardless of what kind of price work you have. These prices remain the same no matter if you are on work in the field, in the woods, with a long haul, or with a short haul. The only source of income you have with which to pay these expenses is that which you get for moving dirt. I believe you will have to agree with me that this fixed expense is actual and not merely a bunch of figures.

Now we have other expenses, the amount of which depends upon the number of days which you will be able to work in the year. I find from asking among the contractors that the average year will not have more than 150 days in which you can actually be moving dirt. There may be years when you can work more days than this, but there are years when you cannot work this many. This is caused, as you know, by rain, high water, Sundays, moving from job to job, etc. If you do not accept the figure of 150 days, however, set your own figure and work with that figure. Now figure how much money you will pay your skinners, dumpers, helpers, engine drivers, etc., including the cost for running machines with gas, oil, etc. By adding all these together you get the actual working expenses for 150 days. This is your working or operating expenses for the days you are moving dirt.

Now add the fixed expenses of 12 months to the working expenses of 150 days and you will have the total cost, or expense of operating your outfit for

Now if you have the cost of operating for one year, and you have only 150 days in which to work to make up this year's expense, you can find out how much you have to make in one day to keep up with your expense by dividing the 150 days into the total cost, or expense for one year, and the answer will be the amount of cost you have for each day you are moving dirt. Remember you have only this 150 days of working time to make up the expenses for 12 months.

It is the contractor's business to be able to look at a piece of work and estimate how many yards can be moved in 150 days, or one day. You have the expense which you have to make up in one day; now estimate the number of yards you can move on this particular job in one day. By dividing the number of yards that can be moved in one day into the expense which you must make up in that day, you will get the price per yard you must get in order to break even. You surely don't want to go to the trouble of working year in and year out and only break even. So add to the cost per yard, the amount of profit you want to make per yard and you will get what is a fair price for the work, and a price at which you can make some money. You are certainly entitled to make a profit for your knowledge of the game and the hours which you put in.

If you will not follow out this system of figuring cost of doing work and do YOUR BIDDING in the old way, you will find yourself at the end of three or four years owing a lot of money and your outfit all run down and no money in the bank.

RECENT TRADE PUBLICATIONS

New Hinge Catalog No. 42. This book is devoted almost exclusively to special purpose hinges and from a casual reading of it, it is apparent the Richards-Wilcox Manufacturing Company is in a position to take care of practically all requirements in this line. Those having special hinge problems will find in this book a solution to them, or if not, a letter to the Company's Engineering Department will bring a reply and a suggestion as to the best method of solving the problem. A copy of the catalog will be sent free to anyone interested. Address Richards-Wilcox Manufacturing Co., Aurora, Illinois, or the San Francisco office, Underwood building.

Some Timely Suggestions for the General Contractor

IN a well organized contractor's office, among the first things that are done after a contract has been received will be the preparation of detailed schedules of all materials that are to be purchased on a unit price basis. These lists should contain sufficiently long excerpts from the specifications to eliminate all doubt as to just what is required in each case.

1. The classification of materials that are almost always bought on unit prices by general building contractors, include:

Cement,
Concrete aggregates,
Masons' materials,
Damp-proofing materials,
Nails and rough hardware,
Fireproofing materials (both terra-cotta and gypsum),
Plastering materials,
Lath and corner-beads,
Rough lumber and timber,
Boards,
Shingles,
Flooring.

2. The following classifications of materials are sometimes purchased on unit prices and sometimes on a lump sum price covering the entire schedule, depending upon the conditions surrounding each particular contract, or the general practice in the contractor's office; at other times a lump sum price may be quoted for all of the materials under the given heading, prepared in accordance with the plans and specifications:

Granite or cut stone underpinning,
Reinforcing steel,
Masons, and carpenters' iron work,
Structural steel,
Steel sash,
Glass for steel sash,
Door and window frames,
Doors and windows,
Interior trim,
Exterior trim,
Storefront materials,
Fire doors,
Kalamein work,
Hollow metal work.

3. These classifications are most frequently bought on the basis of a lump sum price for all work in a given structure, according to plans and specifications, but the installation is done by the general contractor:

Ornamental cut stone work,
Architectural terra-cotta,
Ornamental wood work.

4. The following classifications are more frequently sub-let by general contractors to sub-contractors specializing in those lines, and who make a lump sum price for all work under the given heading, complete according to plans and specifications:

Pile foundations,
Metal furring and lathing,
Plastering (on large operations),
Weatherstrips,
Window screens,
Roofing,
Sheet metal work,
Plumbing,
Heating,
Ventilating,
Ornamental iron,
Ornamental bronze,
Awnings,
Blackboards,
Interior marble,
Tiling and terrazzo,
Painting and decorating,
Electrical work,
Vacuum cleaners,
Elevators,
Mail chute.

In all cases where the estimating department obtains specific figures from material men and sub-contractors, and uses those figures as a means of securing a given contract, ethics demand that the orders or sub-contracts be placed with the people whose prices were used. Then, the only function of the purchasing department is to make certain that there is no misunderstanding as to what is to be furnished, and under what terms and conditions. Under all other circumstances the procedure outlined herein should be followed.

In every purchasing transaction a definite understanding must be reached on each of the following points:

a. Kind of material,
b. Grade or quality,
c. Quantity,
d. Place of delivery,
e. Time of delivery,
f. Price,
g. Terms of payment.

Ordinarily, numbers a to e will be specified by the purchaser, while numbers f and g will be specified by the seller.

In order to be certain of buying in the best markets, a well equipped purchasing department will have complete lists of all the dealers and sub-contractors in its territory. These lists are best kept in card-index form and should be so catalogued that it is at all times possible to pick out the dealers most likely to be able to furnish required materials advantageously.

When a schedule of materials for any classifications in list 1 is received, the purchasing department should be certain that it contains all the necessary information as to a to e, and should then send it to each of the dealers interested, with a request that they quote prices.

With schedules of materials for any of the classifications, in list 2, it is essential that a copy of the plans or detailed drawings or detailed written descriptions shall accompany the list in order that the dealer or manufacturer may be able to estimate definitely the cost of furnishing the required materials.

When the responses have been received to any set of requests for prices, they should be carefully examined to make sure that they offer to furnish exactly what is required. It will frequently happen that a dealer may not be in a position to furnish the brand or quality of materials desired and may quote upon a

possible substitution, or he may not be able to make delivery at the time specified and will offer to deliver at some later time.

Substitution should never be permitted in ordering materials for concrete work, unless approval has first been obtained from the architect or engineer responsible for the specifications, even though it might appear that the substitute material would answer the purpose fully as satisfactorily as the material originally specified. Quite frequently, a little time and attention given to such a detail as this will be the means of avoiding very considerable expense later. The assumption is that the author of the specifications knew exactly what materials are required for the execution of the design and that he should be consulted before any variation in materials is attempted.

When the time of delivery offered does not agree with that specified in the request for quotation, it is necessary that the superintendent, or other official responsible for the completion of a contract, be consulted to see that the progress of the work will not suffer because of delay in delivery of the materials under consideration. If the point of delivery mentioned in a proposal does not agree with that required, or if the points of delivery offered by different bidders vary, it is necessary to determine the cost of delivery in such cases, so that the several bids may be compared on the same basis.

Having determined which proposal is most advantageous from the standpoint of the purchaser, when all the factors a to g are considered, a written order should be issued. A sufficient number of copies should be made so that the original may be sent to the seller and copies to the superintendent in charge of the work, one to the official charged with following up deliveries, one to the official charged with the final checking or approval of bills and one to the files of the purchasing officer.

On cost-plus contracts, it is sometimes required that a copy of such orders be filed with the resident engineer, or other representative of the owner.

Orders may be written on ordinary letter heads, but a printed order form is recommended. Such a form has a place for inserting each item of essential information and thus diminishes the likelihood of overlooking anything.

The initials "f. o. b." mean "free on board," and indicate that the seller assumes all expenses and responsibilities for delivery to the point named. At that point the goods become the property of the purchaser and, so far as the seller is concerned, the purchaser assumes all further expense and responsibility.

"Freight allowed" simply means that the actual cost of freight, from shipping point to delivery point, may be deducted by the purchaser when paying the bill, but does not mean that the shipper has assumed any responsibility for actual delivery or for delay in transit.

Thus, if goods were purchased for use on a contract in Toronto, and the price was made f.o.b. cars, Toronto, any claims for damages to the goods while in transit might be deductible from the bill rendered by the seller. He, in turn, would have to look to the transportation company for reimbursement.

On the other hand, if the goods were sold f.o.b. cars, Windsor, Ont., freight allowed to Toronto, the shipper would have a good claim against the purchaser as soon as the bill of lading was signed by the agent of the transportation company, even though the goods never reached Toronto, and the purchaser would have to look to the transportation company for reimbursement for any damages.

This distinction may also have a bearing upon the date when a bill comes due for payment. In the first case, a purchaser might be justified in claiming an extension of time for payment because of delay in delivery. In the latter case, he would have no grounds for such distinction.

In placing orders, an understanding should always be had with the seller as to the terms of payment. In most lines of business it is understood that the prices are net for payment thirty days after shipment, though some lumber shippers allow sixty days.

When payment is made before due date, it is customary to allow some discount, usually two per cent on accounts settled within ten days. Sometimes, when the seller has an overstock of goods and is short of ready cash, an even larger discount may be offered for payment. On the other hand several of the large steel companies will allow only a very small discount for cash payments. Of course, when goods are sold with the understanding that payment must be made in thirty days, the seller has a right, though it is seldom enforced, to demand interest on all accounts allowed to run beyond the due date.

Because the letting of a sub-contract puts the general contractor in the position of being responsible for the work of the sub-contractor, even though the general contractor can exert supervision only through the sub-contractor and not directly upon the men executing the work, the placing of sub-contracts should receive a great deal more care and attention than is ordinarily the case.

It must be remembered that the sub-contractor may be under the temptation to put the making of a profit before the delivery of entirely satisfactory work and by yielding to such temptation he may very seriously injure the reputation of the general contractor.

Again, a poorly equipped or improperly organized sub-contractor may so delay the entire work as to cause the general contractor a very serious financial loss.

Because common honesty requires that any sub-contractor whose proposal is used by a general contractor in securing a contract should be awarded the work upon which he bids, no general contractor should solicit sub-bids for such purposes from those to whom he would be unwilling to sub-let.

This principle requires that a well organized general contracting office will build up a list of satisfactory sub-contractors. The list should be so catalogued and divided that the best names available, considering nature, size and location of the work, can readily be chosen and invited to figure. This is usually done by sending out a printed or typewritten form on postal cards:

Please send us estimate for all work in your line on plans for Graded school building, Three Rivers, P.Q., Smith and Jones, architects.

Bids wanted first mail August 23rd, 1924. Plans may be seen at this office or in the office of the Superintendent of Schools at Three Rivers.

White Construction Company.

When the sub-bids come in, it is the function of the estimator, by comparing them with one another, as well as with the plans and specifications, to determine which shall be used in making up the general estimate.

Ordinarily, if the estimator's work has been properly performed, the purchasing official will have nothing to do in the awarding of a sub-contract beyond determining the terms of payment and placing the order.

Of course, there are frequent occasions where changes are made in the design of a structure during the final negotiations between the time of submitting bids and signing the contract. In such instances particular care should be taken to see that proper adjustments are made in each sub-bid affected by the change, before the sub-contracts are awarded.

Almost invariably, the specifications require that such items of work as roofing and waterproofing, and quite frequently other items, shall be bonded or guaranteed in writing for a definite period of years after completion.

Whenever such requirements exist, arrangements should be made so that the final payment to the sub-contractor will not be paid until the bond or guarantee has been furnished and approved by the architect or engineer.

Good judgment dictates that insurance be carried to cover what liability might arise through injury to any other person having occasion to come on or near the work. However, the sub-contractor is usually held to be directly responsible for the insurance of his own employees, but his failure to do so might cause that responsibility to rest upon the general contractor. For that reason no sub-contract should be awarded for work actually to be done on the structure, without first ascertaining, by examining the policies, or requiring a certificate, that the sub-contractor carries proper insurance.

The House Heating Problem

Gas companies are solving the house heating problem by finding summer uses for gas which will equal or at least approximate the winter heating load, according to reports from Chicago, Portland, Oregon, and other cities received by the American Gas Association.

Heretofore many gas companies were reluctant to take on house heating to any great extent because of the enormous strain on plant capacity which might occur during the winter as compared with the summer when no gas is used for this purpose. This would necessitate the installation of expensive gas manufacturing equipment, much of which would lie idle nearly half the time.

Reports coming in to the Association, however, indicate that there is a large potential demand for gas in the summer as well as in the winter time. Many householders and some theatres and public buildings, meat and fish markets, etc., now use gas in ammonia refrigerators or cooling plants and engineers say it is possible to cool the nation's houses through the same agency that is being increasingly used to warm them, thus keeping a building so equipped at a uniform temperature throughout the year.

The cooling effect of city gas is produced by absorbing ammonia in water, boiling off the ammonia as a gas, cooling the ammonia gas and allowing it to expand into the refrigerating coils. The expansion of the ammonia gas causes the cooling effect in the refrigerator. The ammonia is recondensed and again goes

A Dangerous Practice

"Some little time ago we had a small garage built," relates the editor of The Western Canada Contractor, and adds: "The contractor took about ten minutes to get details of what was wanted and then gave a snap figure on the job completed. When the work was finished and payment made, he figured that he had received less than 25 cents per hour for his time. Although we made his check for a little more than the estimate called for, yet he lost money on the work simply because he had not accurately figured the time it would take and, also, he had miscalculated the amount of material required.

"And it's a very common practice. A builder is entitled to a reasonable sum for his time and skill. If he does not get it the reason is more often than not because he jumped to conclusions. Snap estimates are invariably on the low side

because there is always something unforeseen cropping up to add to costs.

"The cost unit system is about the quickest and safest way to figure any job, and it can best be arrived at by each contractor making up his own records. No one knows better than he how much materials cost laid down and how quickly and well he or his men can work, both of which conditions are primary factors in whether he makes a profit or loses money on the work.

"To get at such unit costs, keep careful records of every job so that the figures are readily available for all similar work. This method is, of course, not always 100 per cent perfect, but it is far safer and will average up more to the builder's benefit than making snap estimates."—Improvement Bulletin.

Making Stronger Concrete

Water is an important ingredient in concrete. Experiments just completed at the Bureau of Standards, Department of Commerce, show that this is just as true with the new quick-hardening high-alumina cements as with Portland cement.

The bureau finds it important to select sand and gravel in proper size graduation since less water is required to make the concrete workable and a greater strength results. The old rule, to use the least amount of water which will make the concrete workable, is found to hold with the new high-alumina cement. In one experiment a decrease of 1 per cent of water was found to increase the strength as much as 26 per cent.

The research is part of the program of the materials laboratories of the bureau upon the useful properties of materials and how they may be enhanced.

A gravel concrete made with the new quick-hardening high-alumina cement generally develops as high a strength in 24 hours as a similarly proportioned Portland cement concrete would develop in 28 days. This quick-hardeneing feature is notably valuable where ground rentals are high, equipment elaborate, or construction difficult, or wherever delays in waiting for the concrete to attain its strength would be costly.

Definition of "Free Plans"

Generally given by one who through a smooth line of talk obtains a building contract on his own terms wherein he is free to act without the oversight of someone who understands construction and is permitted to pass on his own work. He gets his contract on a "closed bid" and his plans and specifications are generally so poorly done that many "extras" are required to complete the building.

New Uses for Face Brick

"Brick and face brick are being used to 'touch up' the exteriors and give an artistic effect even where stucco and lumber are used for the walls. The wonderful coloring in the landscapes of Southern California are responsible for this tendency more than anything else. To conform to the natural setting, houses and business structures must have some color. And color is most easily provided by the use of brick.

"Chimneys for fireplaces have always been built largely of brick. The same material has also been used more or less in the construction of porch pillars. But now people are finding many other uses for brick—as window sills, arches over doorways in the porchless Spanish-type houses, as walls or balustrades around patios or flower gardens and as purely decorative designs in gables." — Pacific Clay Products, Los Angeles.

Magazine Is of Value to Him

Oakland, California
Aug. 24, 1925

Editor The Architect and Engineer,
Sir:

I have before me your invitation to become a subscriber to your magazine. Mr. Lloyd Cobbledick has shown me several recent copies. I subscribe to nearly every building magazine published in America that deals with home building and I can frankly say the best of them does not contain as much of interest and value to me as your magazine.

I am enclosing a check for one year's subscription. I will always be glad to receive any interesting data, etc., that you may have regarding home building.

Cordially,
(Signed) LEROY M. BAIRD,
Builder of Fine Homes.

Pass Examination

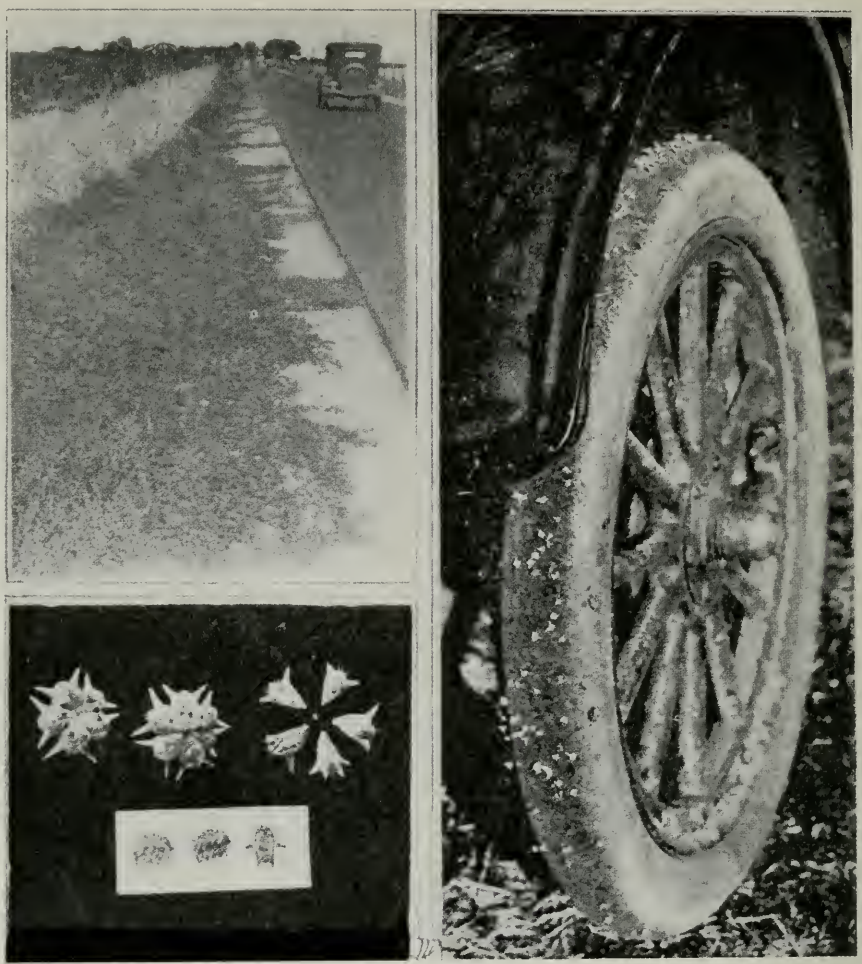
The recent state examination for the practice of architecture in Washington resulted in the addition of two new qualified practitioners, architect N. Torbitt of Longview, Wash., and Mr. Arrigo M. Young, the engineering partner of Schack, Young & Myers, Seattle.

Architect Wins Prize

Mr. John Russell Pope, New York architect, has been awarded the $20,000 prize for the best design submitted to the Roosevelt Memorial Association for a national memorial in Washington to the late President Theodore Roosevelt.

Architect Changes Name

Architect Louis Scisorek has had his name changed to Louis Selden, and has moved his office from 2039½ Brooklyn avenue to 517 Bryne building, Los Angeles.



Puncture Vine—Upper left—the vine as it grows along the California highway. Lower left—the seed pots, showing the sharp barbs; Center—pods sticking to an automobile tire.

Puncture Vine a New Terror to Motorists

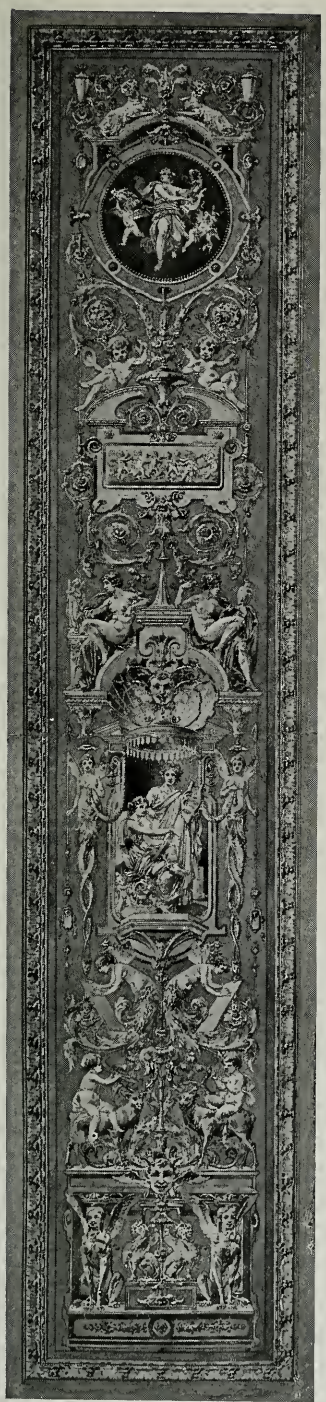
ASIDE from the actual care of the highway itself, no activity of the maintenance department of the California State Highway Commission, is of greater importance than its campaign for the eradication of noxious weeds and pests from the highway right of way. The effectiveness of the state's efforts in this direction, it should be pointed out, depend largely upon the cooperation of the owners of adjoining lands, if they be likewise infected, and upon the help secured from counties in cleaning up roads leading into the state highways.

Recently representatives of a number of the San Joaquin valley counties met to plan a valley wide effort for the eradication of the "Puncture Vine," one of the worst pests infecting the highways in certain sections of the state.

Mr. George R. Winslow, maintenance engineer, has assured those interested that the California Highway Commission will do its full share in this campaign. To this end studies have been going on for some time to determine the most effective methods for fighting the weed and a number of experiments, including the use of oil sprays, have been tried.

Puncture vine is the common name given to a serious weed pest which botanists call "Tribulus terrestris." It has earned this common name because of the sharp pointed spins, of which there are two on each bur. This bur is so balanced that one of the two spines always points upward when the bur is lying on the ground. These spines are about as long, and nearly as stout, as an average carpet tack. The burs are borne in clusters of five with the spines outward, giving the

(Concluded on page 124)



Mural Paintings

By

A. G. DISI

ARTIST PAINTER
AND DECORATOR

MR. DISI'S name is a household word in artistic decoration, and as such he has many admirers not only in California, but also in the East.

After having completed his education at the School of Fine Arts in Rome under Professors Bruschi and Bazzani, he came to this country 25 years ago.

His numerous works cover Churches, Banks, Theatres and Public Buildings. The headquarters of the Bank of Italy, and the Church of The Sacred Heart in San Francisco deserve a special mention.

His most recent works are: The Senator Theatre and The Sacramento Hotel, both in Sacramento. Mr. Disi is now in charge of decorating the new Elks Club in Sacramento, in which all the principal rooms are to be carried out in several Georgian periods.

Mr. Disi is of a very happy and genial nature, keen and enthusiastic in his work and in everything which arouses his sympathy.

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cluster a star-shaped appearance. When mature the cluster readily falls apart. An average-sized plant may bear as many as ten thousand burs, within each of which are from two to four seeds, only one of these germinating at a time.

The rapid spread of puncture vine in California, during the past few years, is directly traceable to the improvement of highways and the resulting increase in motor vehicle traffic. The fact that the burs may be readily carried by automobile tires points toward infestations along highways and county roads as the chief sources of spread.

The motorist is the first to be affected by the spread of this weed, for his tires can pick up many thousands of these burs and transport them to entirely new locations. However, the present-day tire is believed practically immune to serious damage. The pod portion of the bur, breaking off, leaves the stout spines to work through the fabric after the tread becomes more worn. It rarely happens that an actual pucture occurs, but the life of the tire is appreciably shortened by the weakening of the fabric.

Granted Certificates

The following applicants were granted architect's certificates by the California State Board of Architecture, Southern Division, at their meeting September 29: Ellis Wing Taylor, 810 W. Sixth street, Los Angeles; Atlee D. Ayres, 626 Bedell building, San Antonio, Texas; Edwin Cullity, University Club, Santa Barbara; Theodore R. Jenkins, 331 Markwell building, Long Beach, and Edwin C. Merrill.

The California State Board of Architecture (Northern Division) has granted certificates to practice architecture in the state to the following:

Mr. Edward A. Nickel, 1935 Berryman street, Berkeley, Cal.

Mr. William Grant Foster, 1090 Peralta avenue, Berkeley, Cal.

Mr. Edwin H. Clark, 8 East Huron street, Chicago, Ill.

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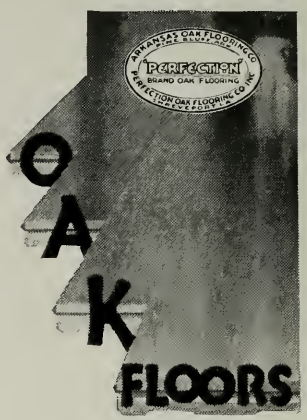

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Contents

VOL. LXXXIII NOVEMBER, 1925 Number 2

COVER PICTURE—DETAIL OF BUILDING FOR CALIFORNIA INSTITUTE OF THEOSOPHY

TUPPER & REED BUILDING, BERKELEY - - - - - *Frontispiece*
W. R. Yelland,
Architect

UNIQUE STORE BUILDING IN BERKELEY - - - - - - - 51
Eugen Neuhaus
Twelve Plates—W. R. Yelland, Architect

THE SPANISH FARMHOUSE TYPE OF ARCHITECTURE FOR KROTONA INSTITUTE OF THEOSOPHY - - - - - - - - - 63
Robert B. Stacy-Judd,
Architect
Thirteen Plates—Robt. B. Stacy-Judd, Architect

TWO BUILDINGS BY MESSRS. ECKEL & ALDRICH - - - - - 73

UNIQUE PLASTER MODEL AT CALIFORNIA INDUSTRIES EXPOSITION 75
Julian C. Mesick
Three Plates

THE ALPER MEMORIAL BUILDING, SAN FRANCISCO - - - - - 77
Nine Plates—Morrow and Garren, Architects

YOUTHFUL APPRECIATION OF ARCHITECTURE - - - - - - 87
Grace Strong Gue

PORTFOLIO OF RECENT WORK OF MESSRS. NOERENBERG AND JOHNSON - - - - - - - - - - - - - - - - 91
Five Plates—Noerenberg and Johnson, Architects

RIGHT OF UNLICENSED ARCHITECT TO ENFORCE CONTRACT FOR FEES 95

TEST OF LUMINITE CONCRETE PILE - - - - - - - - - 97
Harlan D. Miller

EDITORIAL - - - - - - - - - - - - - - - - 102

WITH THE ARCHITECTS - - - - - - - - - - - - - 105

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TUPPER & REED BUILDING, BERKELEY
W. R. YELLAND, ARCHITECT

Frontispiece
The Architect and Engineer
November, 1925

THE ARCHITECT AND ENGINEER

NOVEMBER
1925

Vol. LXXXIII
No. 2

Unique Store Building in Berkeley

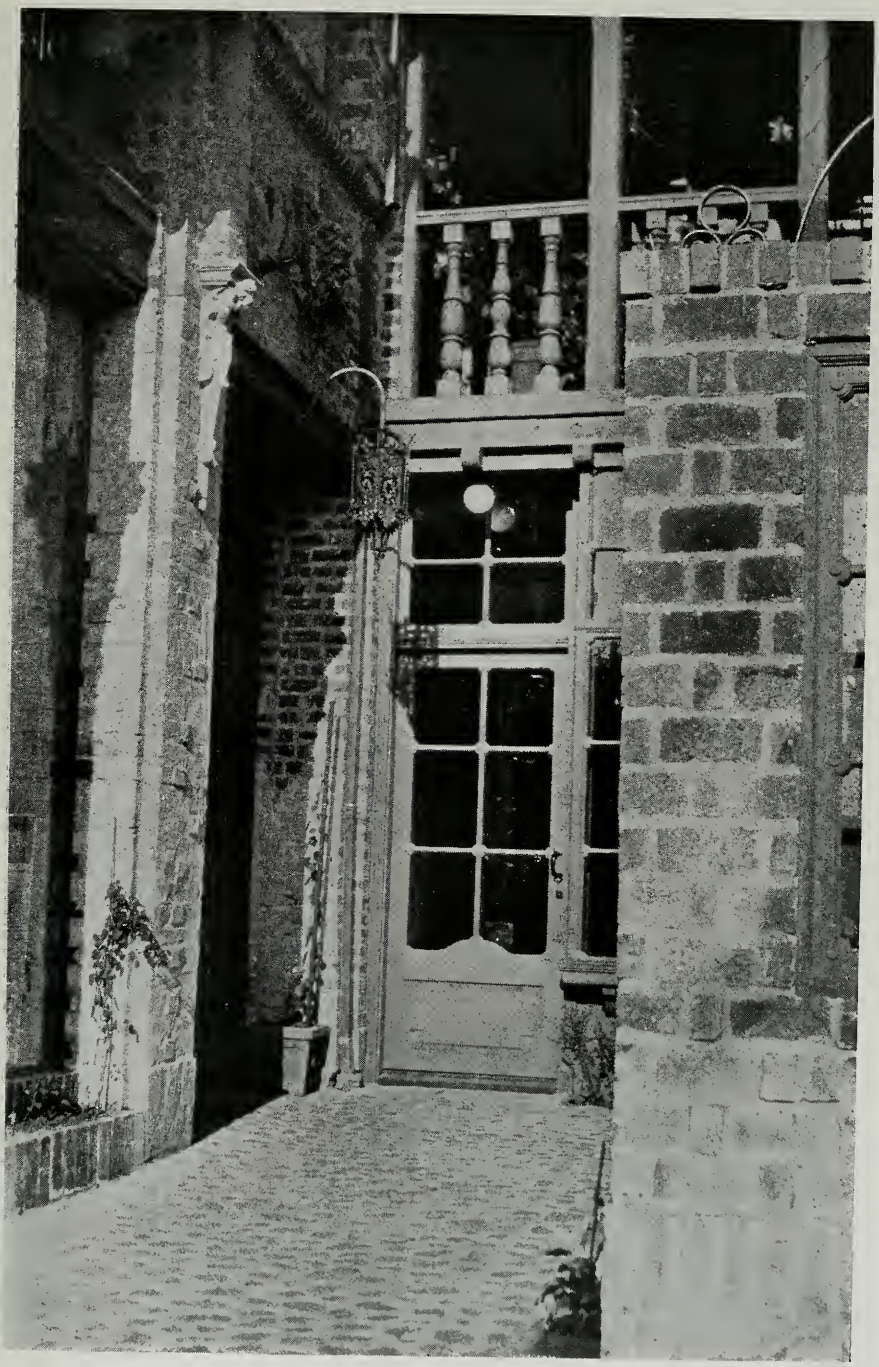
By EUGEN NEUHAUS

LAST spring when Tupper & Reed's music store in Berkeley was in process of construction one of my boys came home from school and said to me: "You ought to see what they are doing on Shattuck Avenue. Wouldn't down town be interesting if all the stores were like that?" The boy is too young to know about sacrosanct school traditions, the glamour of historic styles and all the other inhibitions of architecture, but he intuitively realized one thing—here was something stimulating, something interesting, something gratifying which gave him a vision of a different, of a happier environment.

There can be no doubt that Tupper & Reed's music store affects many in a similar way, because many of our citizens (whether shopper or business man) have merely tolerated the cold, stony-faced store front as an apparently inevitable thing. Nobody, of course, would claim originality of style for this new venture. It at once brings to mind many places of the old world—Nurnberg and Rothenburg on the continent or the ever charming country side of Merrie England. It is obviously as historical as many of our banks that are built to resemble Greek temples, but it is more than that. It is not a cold, lifeless aggregate of book selected forms put together to satisfy a given need; it has that which apart from good structural design is so lacking in our land, a sense of intimacy, of loving attention to detail, of pleasure in something done well.

True the building is absolutely out of harmony with its surroundings, but what of it? Are the surroundings really worth being taken into account? So many stores here, there and everywhere are mere storage depots, depositories of goods, not unattractive perhaps in themselves, but after all warehouses where conditions prevail unfavorably to any eye or body comfort, where one goes to do business and departs as quickly as possible. But here at Tupper & Reed's one comes to stay and browse and linger. This may or may not be good business psychology, but it makes for pleasure and satisfaction and this invariably brings business because people return.

COURTYARD, TUPPER & REED BUILDING, BERKELEY
W. R. YELLAND, ARCHITECT



ENTRANCE, TUPPER & REED BUILDING, BERKELEY
W. R. YELLAND, ARCHITECT

OUTSIDE STAIRS, TUPPER & REED BUILDING, BERKELEY
W. R. YELLAND, ARCHITECT

VESTIBULE TEA ROOM, TUPPER & REED BUILDING
W. R. YELLAND, ARCHITECT

TUPPER & REED MUSIC STORE BUILDING, BERKELEY
W. R. Yelland, Architect

TUPPER & REED MUSIC STORE BUILDING, BERKELEY
W. R. Yelland, Architect

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TEA ROOM, TUPPER & REED BUILDING, BERKELEY
W. R. Yelland, Architect

The building fascinates in ever so many different ways—it is playful, it appeals to the imagination in its happy surface variations of light and shade; its pleasurable detail done with fine understanding of the material possibilities. It is also an apparent contradiction to the condition so generally lamented by our architects— that we have no craftsmen. It is quite evident some workers, including the architect, got a lot of fun out of doing this building; and anything that we honor by calling it art must give us this feeling. Since the Berkeley music store does possess this feeling in so marked a way it will inevitably convey many pleasurable feelings to others.

If we only had more business men to realize the dreadful boredom of the commonplace that so often makes of architecture a stupid business and not a stimulating art! Mr. Yelland, indeed, is to be congratulated upon his opportunity and upon his ability to meet it in so interesting and satisfying a way.

* * * *

The building was erected by Hansen, Robertson & Zumwalt of Oakland at an approximate cost of $40,000.

On the next two pages more of Mr. Yelland's recent work is shown in the houses of Captain and Mrs. Edwards and Mr. and Mrs. S. M. Taylor. Both are interesting designs and when the gardening is finished will be among the show places in the East Bay section.

HOUSE OF CAPTAIN EDWARDS, BERKELEY
W. R. YELLAND, ARCHITECT

HOUSE OF CAPTAIN EDWARDS, BERKELEY
W. R. YELLAND, ARCHITECT

HOUSE OF CAPTAIN EDWARDS, BERKELEY
W. R. YELLAND, ARCHITECT

HOUSE OF MR. S. M. TAYLOR, OAKLAND
W. R. YELLAND, ARCHITECT

ADMINISTRATION BUILDING, KROTONA INSTITUTE OF THEOSOPHY
ROBERT B. STACY-JUDD, ARCHITECT

LIBRARY, KROTONA INSTITUTE OF THEOSOPHY
Robt. B. Stacy-Judd, Architect

The Spanish Farmhouse Type of Architecture for Krotona Institute of Theosophy

By ROBERT B. STACY-JUDD, Architect

WHEN the very beautiful property in Hollywood, California, owned by the Krotona Institute of Theosophy became too valuable, it was decided by the directors to seek quarters elsewhere. Another great factor in seeking a new location was the desire to be more secluded and as their Hollywood property was entirely surrounded by lovely homes, the seclusion the Institute wished was destroyed.

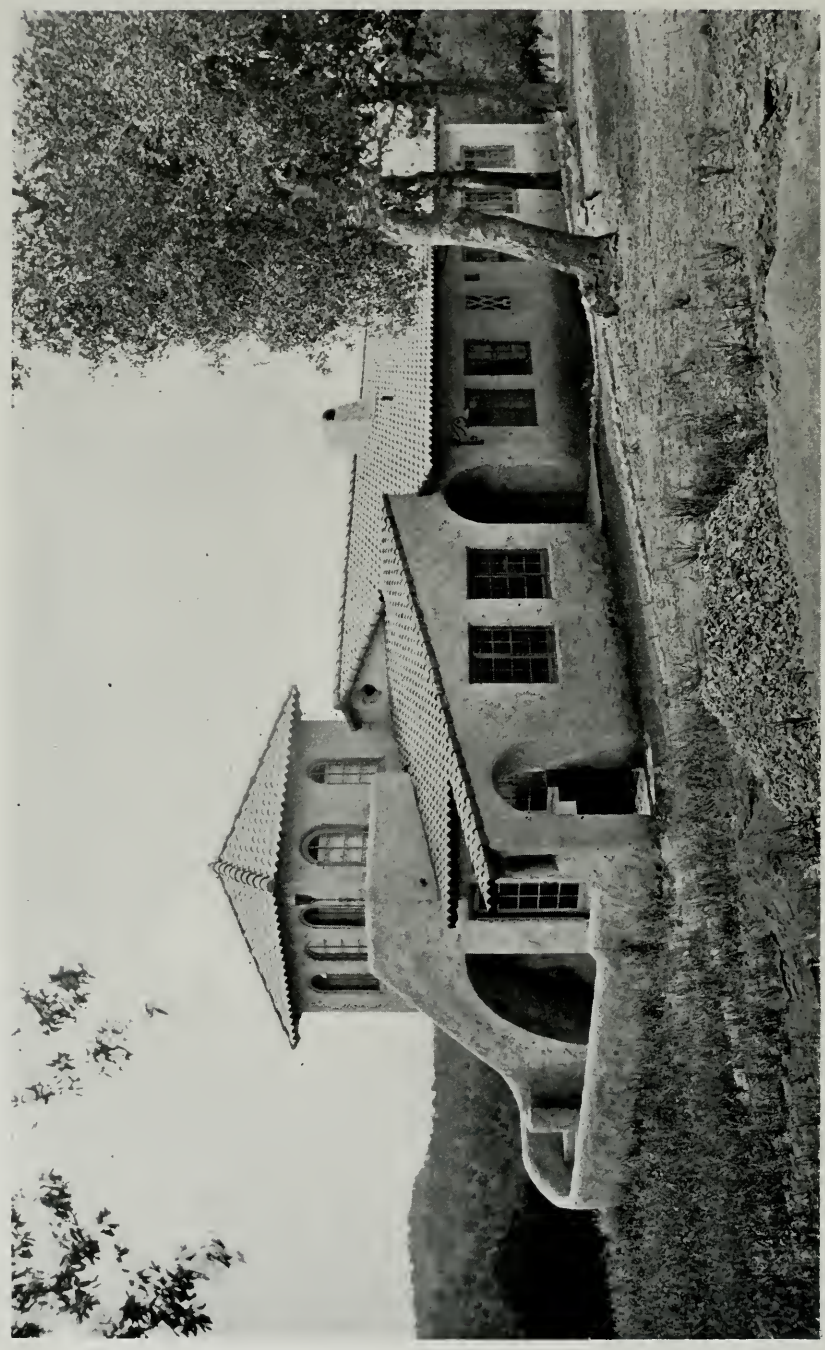
Mr. A. P. Warrington, president, who knew California and its beauty spots, chose the magnificent site they now occupy in the Ojai Valley. This valley lies a few miles east of Ventura and is considered one of the most picturesque centres in Western America.

Magnificent homes grace the hillsides and undulating valley bottom and if peace and contentment are sought, then it will be hard to conceive a more perfect setting than the Ojai Valley.

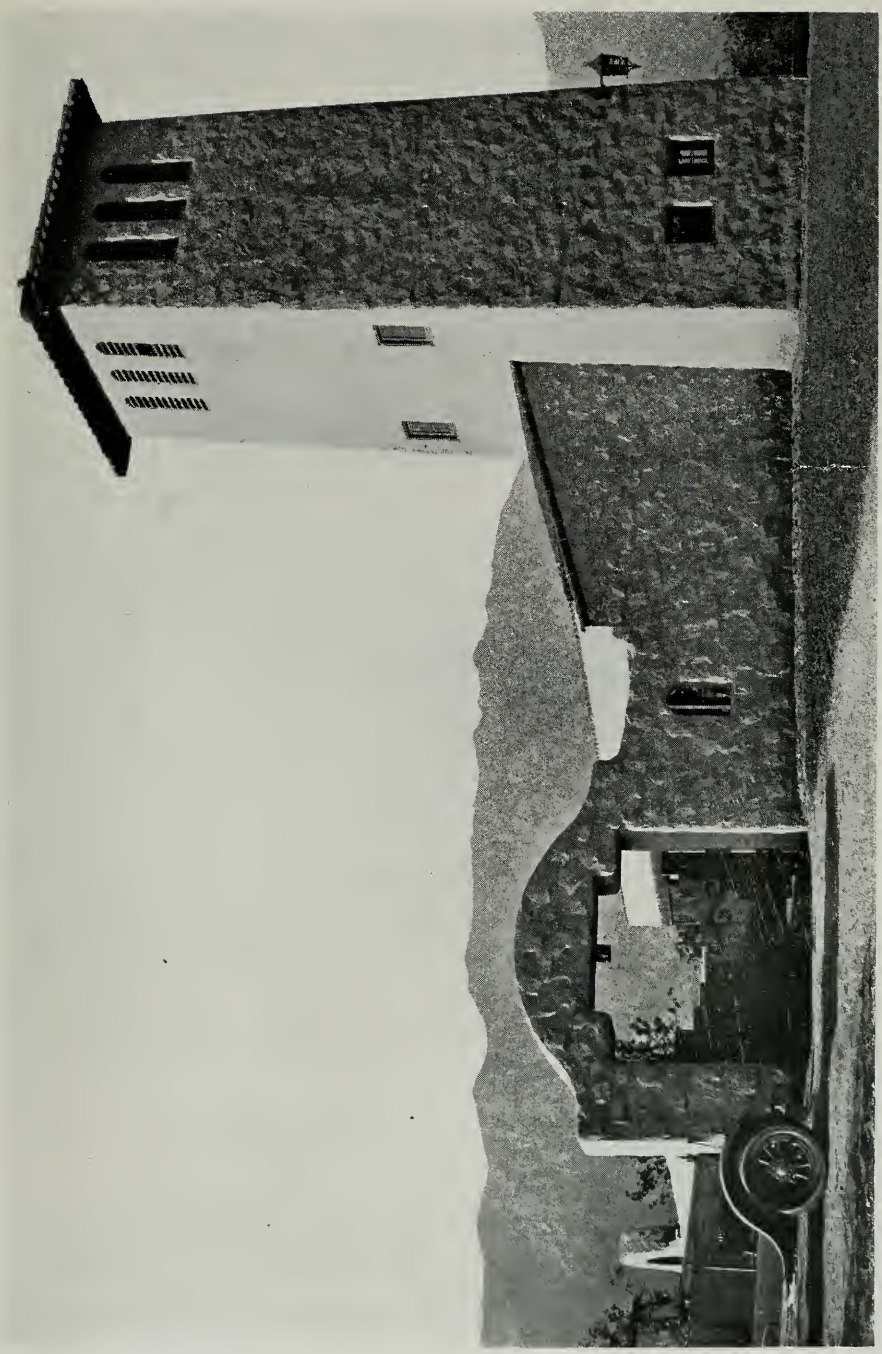
I believe that a trip made to this spot would be well repaid if only for the purpose of reviewing the gorgeous sunsets—where color runs riot and the heavens paint the beautiful hills with kaleidoscopic effect as King Sol sinks below the western horizon.

To the west end of the valley rises, in even slopes, a picturesque hill, well be-sprinkled with live oaks. This one hundred and twenty acres of property was purchased by the Headquarters of the Krotona Institute of Theosophy of which Mrs. Bessant is the ruling spirit. A winding road leads from the main highway to a fairly level crown and thereon, nestled in the choicest location, has been erected a group of buildings to serve the purposes of the Institute.

It is the intention ultimately, to equip the site with school buildings for the purpose of studying Theosophy, a temple, and a number of cottages and other buildings. The program for the preliminary pro-



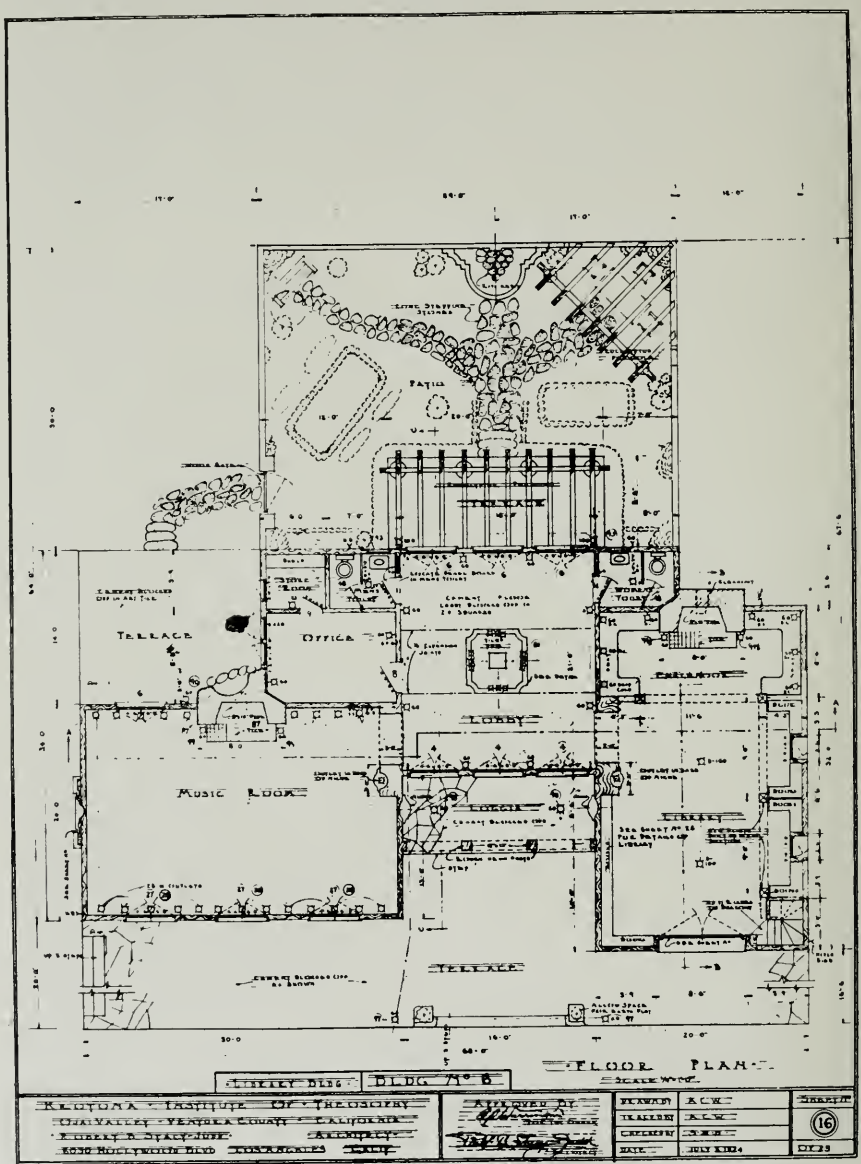
ADMINISTRATION BUILDING, KROTONA INSTITUTE OF THEOSOPHY
ROBERT B. STACY-JUDD, ARCHITECT



GARAGE AND WATER TOWER, KROTONA INSTITUTE OF THEOSOPHY
ROBERT B. STACY-JUDD, ARCHITECT

ject as now executed, consists of an administration building with a private office and study garden for the president, secretarial and stenographic offices, multigraph rooms, a private library, manager's office and the printing department.

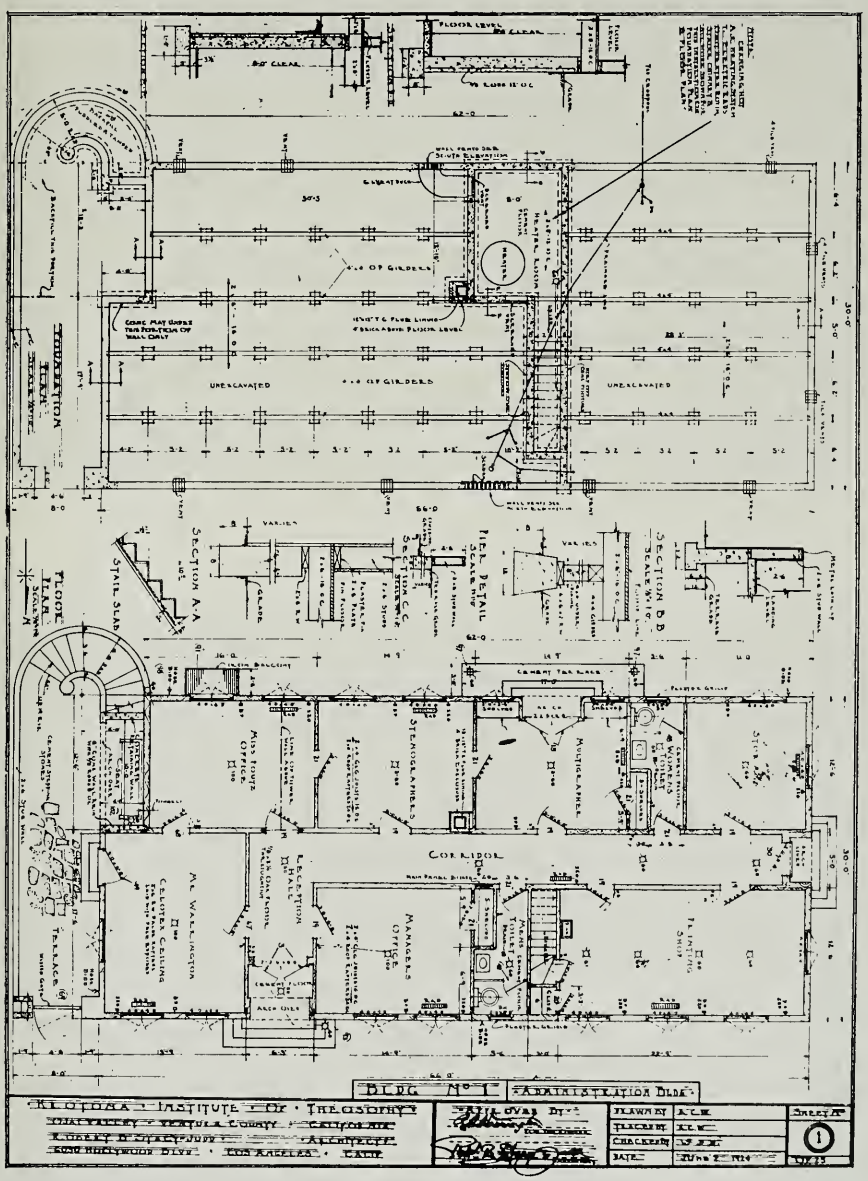
A few hundred feet to the north of this building is the library, facing east, consisting of a terrace twenty feet wide the full width



of the building across which the main entrance is gained. A fairly large lobby divides the building in two halves and is treated with Travertine walls, and beam ceilings with stencil design in three colors between the beams. To the left of the entrance is the music room carried out on very simple decorative lines and indirect lighting. On the right is the library room containing many thousands of volumes on

Theosophical work. For assembly purposes terraces are arranged to face one to the east and one to the west and on the southwest angle an outside fireplace is provided to furnish comfort during the cool evenings.

Some considerable distance to the west of these buildings is situated the nucleus of Krotona village. The first building included in the group is the home of the president, Mr. A. P. Warrington. This building



consists of two complete suites, each suite containing a study with the living-room between. To the rear of the living-room is a patio containing pool and fountain and a little beyond is the dining-room, kitchen and maids' quarters, entirely separate from the main building. A group of buildings to the west of the president's house, consisting of three cottages and the garage and water tower, completes the present building

LOBBY, LIBRARY BUILDING, KROTONA INSTITUTE OF THEOSOPHY
Robt. B. Stacy-Judd, Architect

MUSIC ROOM IN LIBRARY BUILDING, KROTONA INSTITUTE OF THEOSOPHY
Robt. B. Stacy-Judd, Architect

LIBRARY, KROTONA INSTITUTE OF THEOSOPHY
Robt. B. Stacy-Judd, Architect

INGLENOOK FIREPLACE IN LIBRARY, KROTONA INSTITUTE OF THEOSOPHY
Robt. B. Stacy-Judd, Architect

LIBRARY BUILDING, KROTONA INSTITUTE OF THEOSOPHY
Robt. B. Stacy-Judd, Architect

ADMINISTRATION BUILDING, KROTONA INSTITUTE OF THEOSOPHY
Robt. B. Stacy-Judd, Architect

MR. WARRINGTON'S HOUSE, KROTONA INSTITUTE OF THEOSOPHY
Robt. B. Stacy-Judd, Architect

WEST VIEW OF COTTAGE NO. 3, KROTONA INSTITUTE OF THEOSOPHY
Robt. B. Stacy-Judd, Architect

program. The cottages are for the accommodation of resident students who will come from all parts of the world to imbibe the higher theosophical learning in peaceful surroundings. The period of the student's visit will comprise from three to six months. The cottages consist of living-room, kitchen, two bedrooms and a bath.

The style of architecture employed throughout is the Spanish farmhouse type. All the exterior walls are constructed to insure coolness during the summer months. The exterior walls are covered with cement plaster to a textured design and finished in a pale cream. The roofs are covered with Spanish tiles. All the living-rooms have tectured walls and ceilings and the living-room in the President's house has a beamed ceiling consisting of 4 x 6 redwood beams burned black, over which was placed split siding, aged. The beams have a Spanish stencil design in three colors.

As it was necessary to place the water tower on the highest point and as this spot is seen from all parts of the valley the water tower was made a feature, and the garage building adjoining same is entirely surrounded by a high Spanish wall.

The style of architecture will be strictly adhered to in all future works erected on the estate and combined with careful landscaping, this project when finished in its entirety, will form one of the most interesting groups of buildings in California.

* * * *

Machine for Laying Bricks

FEW trades connected with construction have given rise to more discussion than that of bricklaying, and it is still an unsolved problem how many bricks a competent bricklayer ought to lay in a day. Figures varying between 200 and 800 have been suggested, but hitherto it has been possible to compare only one man's work with another's.

Now, after years of experimenting, a machine for laying bricks is said to have been perfected. The "K" erector, as it is called, is made by Sir William Arrol & Co., Ltd., of Glasgow, and is being used on a housing scheme in the Glasgow area. It consists of tubular uprights, connected at top and bottom, and free to travel on rails along the outside walls.

Across the width of the house to be built, and carried on the uprights, is a boom which can be raised and lowered. On it are mounted a small traveling carriage, the mortar tank and the bricklaying mechanism. With the last named over the starting point, the lying wheel rotates, taking two bricks at a time from the hopper, while the measuring mortar wheel spreads the mortar. Thus, as the carriage moves across the boom, one row of bricks is laid.

When the end of the wall is reached the direction of the carriage can be changed and the movement of the machine adjusted so as to lay bricks along one of the side walls and then across the back and up the other wall to the point where the work was started. After a course has been laid all around, the boom has to be raised by the thickness of one brick, plus the mortar joint, and the operation repeated until the desired height is reached.

Provision is made for automatically cutting off the supply of brick and mortar wherever a doorway or window intervenes. The feeding of the brick into the hopper is best performed by hand, and the speed at which the machine lays them is regulated thereby. The average is said to be between 1200 and 1500 bricks per hour.

BUILDING FOR NATIONAL BISCUIT COMPANY, LOS ANGELES
Eckel and Aldrich, Architects

Two Buildings by Messrs. Eckel and Aldrich

THE two illustrations shown here are good examples of the recent work of Architects Eckel and Aldrich of Los Angeles and St. Joseph, Missouri. The picture above shows the new plant under construction in Los Angeles for the National Biscuit Company. It is an excellent type of factory construction, with somewhat more attention paid to the architectural treatment than customary in the design of similar structures. The plant will cost two million dollars, including equipment.

The design for the St. Joseph, Missouri, city hall, is along modern classic lines and shows painstaking study. The concrete piling and foundation work for this building are now under construction.

CITY, HALL, SAINT JOSEPH, MISSOURI
Eckel and Aldrich, Architects

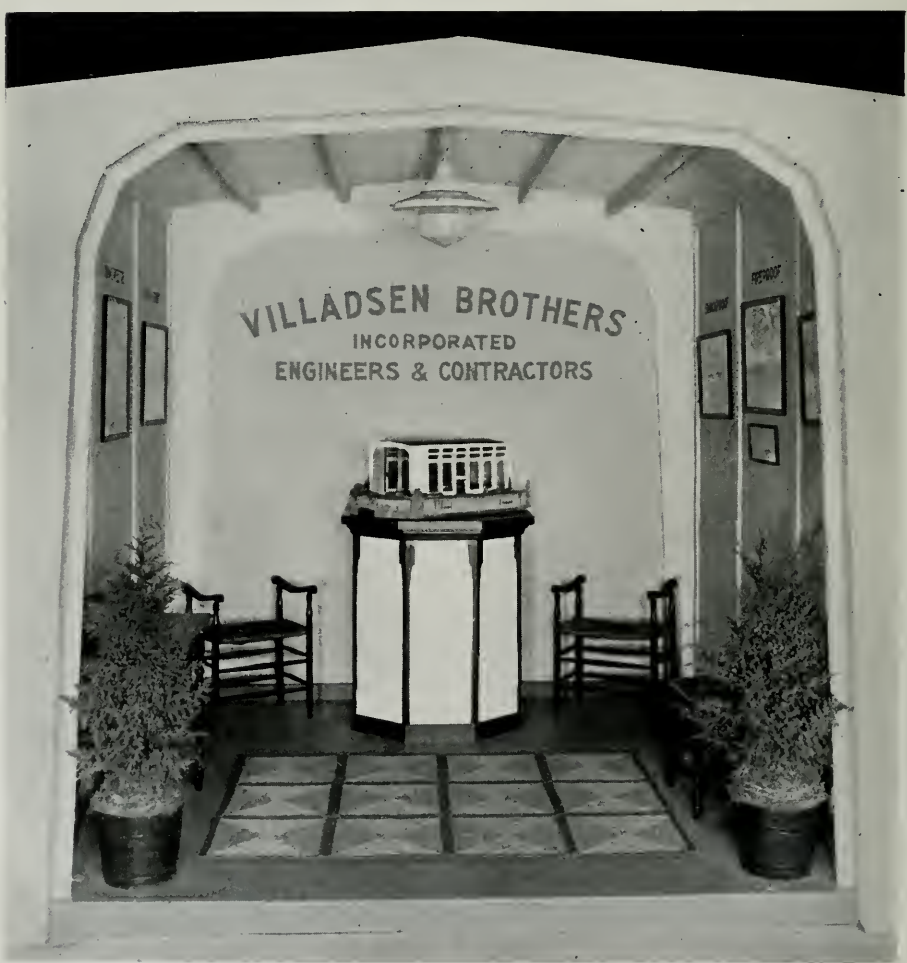


EXHIBIT BOOTH OF VILLADSEN BROTHERS AT CALIFORNIA INDUSTRIES EXPOSITION

Unique Plaster Model at California Industries Exposition

By JULIAN C. MESICK

THE exhibit booth illustrated on the opposite page was designed by the writer for Villadsen Brothers, Inc., for the California Industries Expositon recently held in the San Francisco Municipal Auditorium. The display was declared a fine example of the possibilities of an engineer's and contractor's exhibit.

The booth and accessories, designed in a simple manner, without effort to gain startling effects, expressed restful unity. No unnecessary furniture or fixtures were permitted a place, and each item carried an interesting story.

The system of building construction demonstrated by the model in the exhibit is unusual. The concrete sections required are amazingly small as witnessed by the size of the structural members of the building model, the central booth motif, which was built to a three-sixteenth inch scale, finely calculated even in the thicknesses of the various coats of paint.

The building is set in a charmingly effective base, executed in plaster, with the principal colors incorporated in the dry plaster before casting. Color effects are accented by a limited use of applied color and shellac in certain portions. By means of these secondary interests the severity of cold engineering requirements are minimized.

The conventionally rendered trees and shrubs incidentally enhance the color scheme while giving the proper atmosphere for the modern industrial plant, a reinforced concrete marine engine erection shop, with a seventy-foot span, fifty-eight feet above the pavement, with provision for vibrationless traveling crane beams built into the frame of the building as a tie.

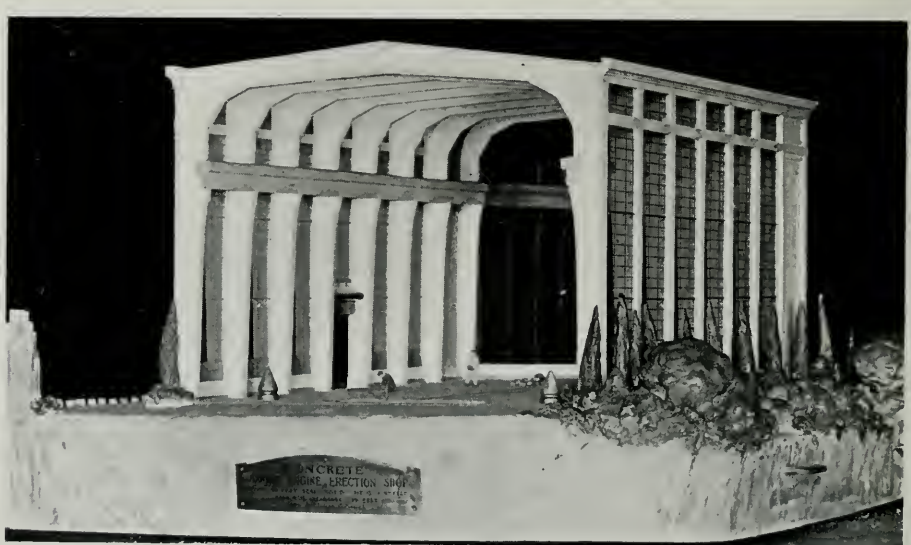
Many interesting problems arose in the making of this model, due to the variety of materials used. A hardwood turntable concealed in base, with handles for lifting a two hundred pound model, required real engineering. Expansion and rust were active enemies throughout. The use of celluloid and special glues gave rise to numerous experiments. Old and tried color formula had to be dug out of the records of past models and adjusted for new conditions. The effect of time and light on colored plasters were always considered, and allowances were made for a decrease in color intensity and a change of hue. Tight joints for monolithic construction caused hours of work. For this reason, the exterior walls were erected long before the roof slab was placed with a fresh coat of heavy paint on the lower side to fill the joints over purlins when the slab should be pressed in place.

Unique and special tools—including a dental machine—were ingenious requisites in the construction of both plaster base and the concrete portions; the latter being imitated in painted veneered wood and cardboard. In fact, the working facilities of the drafting room, cabinetmaker, jeweler, wood carver, planing mill, sign painter, machine shop, tinner, plater, painter, sculptor and even the equipment of a well-ordered home were indispensable at times.

PLASTER MODEL OF A CONCRETE MARINE ENGINE SHOP
Julian C. Mesick

Facility in handling and shipment are important items in all models. Special anchors in the bases of the two portions of this model insure its safe transportation anywhere, without danger to fragile portions.

The field of sculptored architectural models in full color is very broad. In this super model every nicety of material and color tone has been reckoned with to render this model pleasing and make it an accurate demonstration of long span concrete roof construction.



VIEW OF SHOP, SHOWING 70-FOOT SPAN
Model by Julian C. Mesick

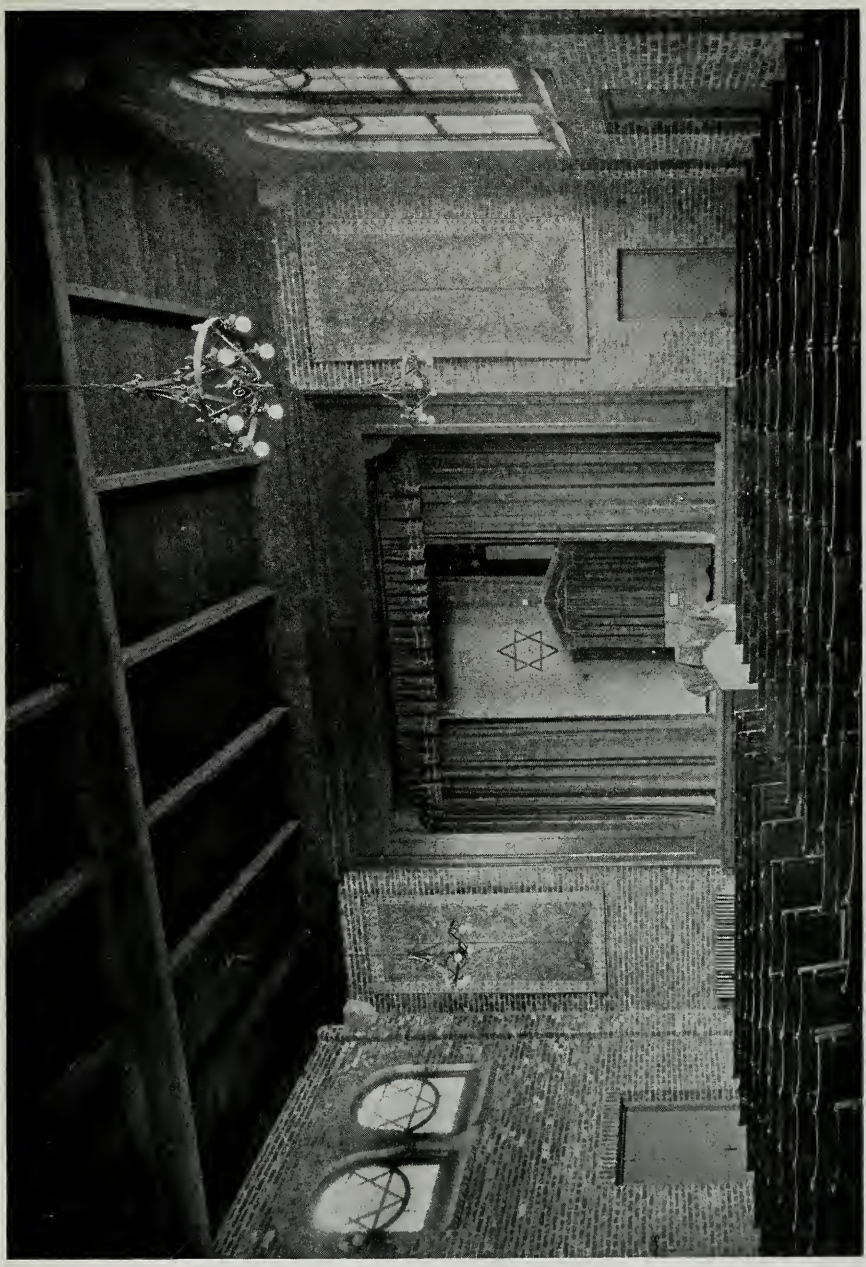
The Alper Memorial Building, San Francisco

THE Alper Memorial Building, San Francisco, stands on a corner lot, 86 by 120 feet. It houses two separate organizations—the Hebrew Free Loan Association, which occupies a space about 30 by 40 feet at the corner arranged essentially as a business office with public and private spaces, and the Jewish Educational Society, which occupies the remainder of the building as a school. This portion consists of five classrooms, principal's office and library, auditorium, seating about three hundred, and play court. The school is operated only for a short period after the regular public school hours and consequently presented less exacting problems than schools ordinarily do. The auditorium may be used separately from the school.

PLAN, ALPER MEMORIAL BUILDING, SAN FRANCISCO
Morrow and Garren, Architects

The construction is self-supporting brick for the outside walls and wood for the interior. The walls are built of used brick, well enough cleaned to eliminate lumps of mortar, but still showing the discoloration of use and in certain cases even bearing coats of white, green, red or blue paint, which had been applied to the walls from which they came. The result is a wall of unsurpassed richness and softness of texture and color, such as tourists might take a cab to see if it existed in an unimportant European town. The stone work is a buff artificial stone made by a wet process, which gives the tone and surface variation peculiar to aged natural stone; indeed, it is more beautiful than any natural stone available in this locality. The stone work is not decorative facing supported by the brick, but builds integrally into the walls.

ALPER MEMORIAL BUILDING, SAN FRANCISCO
MORROW AND GARREN, ARCHITECTS



AUDITORIUM, ALPER MEMORIAL BUILDING
MORROW AND GARREN, ARCHITECTS

SCHOOL ENTRANCE, ALPER MEMORIAL BUILDING
MORROW AND GARREN, ARCHITECTS

SAN FRANCISCO
PUBLIC LIBRARY

FREE LOAN ENTRANCE, ALPER MEMORIAL BUILDING
MORROW AND GARREN, ARCHITECTS

SCHOOL COURT, ALPER MEMORIAL BUILDING
MORROW AND GARREN, ARCHITECTS

ALPER MEMORIAL BUILDING, SAN FRANCISCO
MORROW AND GARREN, ARCHITECTS

DIRECTORS' ROOM, ALPER MEMORIAL BUILDING
MORROW AND GARREN, ARCHITECTS

DIRECTORS' ROOM, ALPER MEMORIAL BUILDING
MORROW AND GARREN, ARCHITECTS

Parapet, main entrances and panels under auditorium windows are enriched with inlaid cement tiles in many colors, all of them soft and in admirable harmony with the brick walls.

On the interior the plaster is slightly rough, and all rough wood ceiling construction has been left exposed. In the auditorium the brick and stone come through and form the interior surface as well. Auditorium and directors' room are adorned with decorative paintings from the hand of Mr. S. Pelenc, who also collaborated on the color schemes for the painting of the interior.

* * * *

Skyscrapers Not Popular in London

WHY London, the world's largest city, has but one or two skyscrapers, while tall structures abound in every American city with a metropolitan development, has puzzled many men interested in buildings and their management.

The answer is to be found in the different latitudes of the two countries, in the belief of Mr. C. Topham Forrest, Fellow of the Royal Institute of British Architects, who recently completed a survey of construction and control of buildings in this country in behalf of the Institute. An abstract of this report was recently published by the British Empire Chamber of Commerce as follows:

"Skyscrapers would shut off the light in London, although they are admirably well adapted to America. The city by the Thames is located 700 miles north of New York city. This difference in latitude makes for a great difference in the angle at which the sun's rays strike. The light rays may directly reach the streets in this country throughout the major portion of the day in spite of the tall buildings, while the same type of building development would shut it off from the thoroughfares in the British metropolis because of the sun's lower altitude.

"The standard of living, generally speaking, is higher in America than in Great Britain, and what Americans term apartments for working classes would be regarded as superior middle-class accommodations in England. However, I do not think American apartments are so well advanced as English structures in interior planning and layout, with perhaps the exceptions of appointments of kitchens, lavatories and bathrooms."

The organization which the British architect represented in America exercises much the same function in England as city planning boards and art commissions in this country. It controls certain properties on which it can erect model houses and apartments.

* * * *

Quake-Proof Chimneys

There is no need for earthquakes to shake down chimneys, according to Chris G. Berg of San Francisco who has designed a hollow common brick wall interlocked with patented clips that thoroughly anchor the brickwork. To resist rupture of the chimney at the roof line, at each corner of the chimney, reinforcing rods are inserted through hollow spaces in the brick.

Another chimney design, which the builder claims will resist violent shakes, consists of a copper pipe enclosed in a galvanized metal sleeve, filled in between the two pipes with fire-resistive chalk rock. It is claimed the chimney will withstand 2000 degrees of heat, the outer surface remaining comparatively cool.

Youthful Appreciation of Architecture

By GRACE STRONG GUE
Secretary, Plans and Planting Committee, Santa Barbara

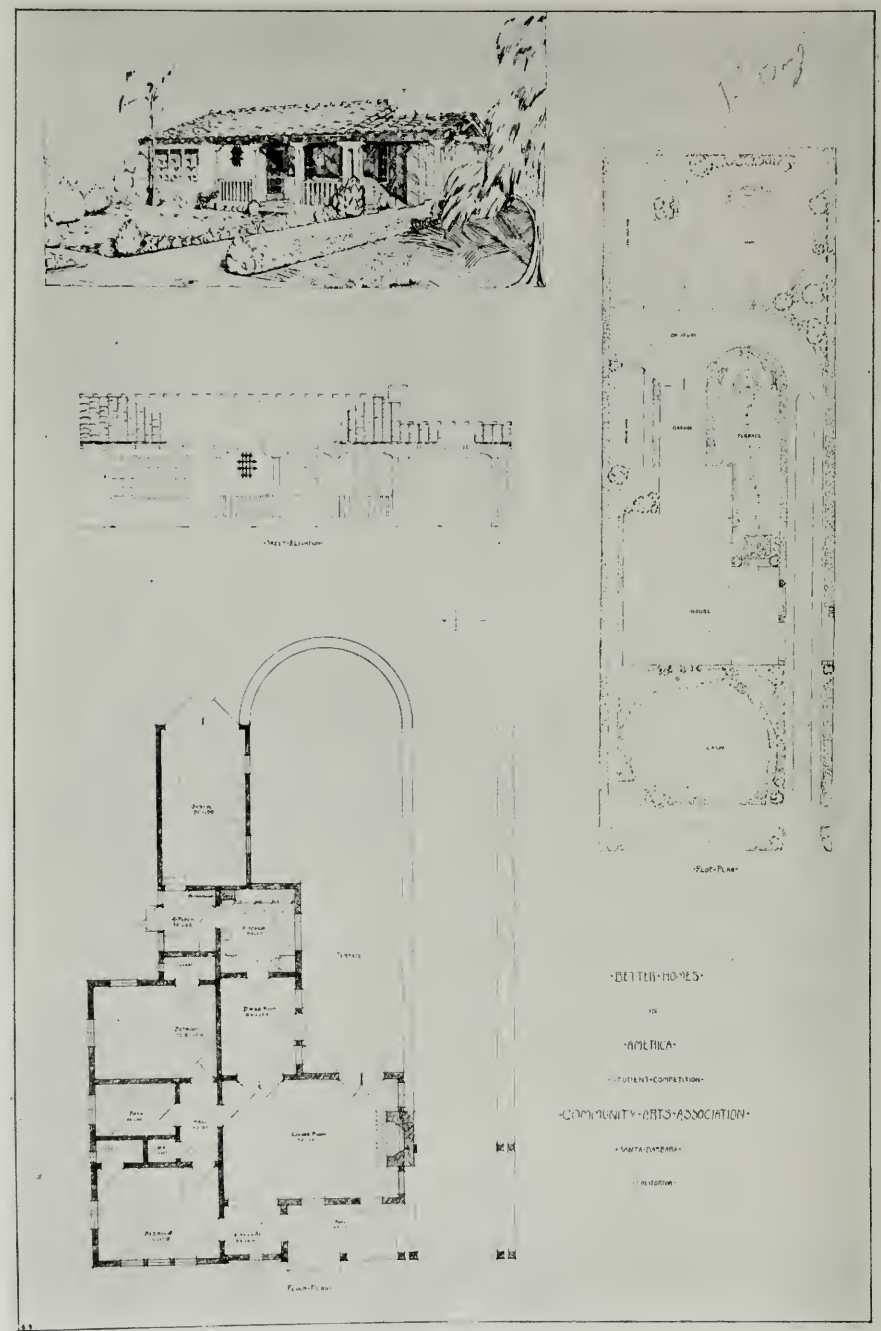
SINCE the organization, in March, 1922, of the Plans and Planting branch of the Community Arts Association, Santa Barbara, the activities have been almost wholly confined to those of mature interest. Underlying practically all of our program has been the hope of stimulating an appreciation of better architecture.

Just how the dormant interest of the younger residents might be aroused and become a wellspring of influence was a problem. We had always noticed the attendance at our architectural exhibits of groups of students from the State Teachers' college and the High school. Both schools taught elementary house planning in connection with their mechanical drawing courses. Taste and judgment are already formed in the adult, so that it is to the plastic mind of youth that effort should be directed. Here was a field of undoubted fertility in which to sow the seeds of influence in order to reap a harvest of better designed homes. Here was a group, not of future professional architects, to be trained by years of discriminating study, but students ranging between fifteen and twenty years of age who would become, for the most part, artisans or teachers of mechanical drawing. Above all, they represented the future home builders in some community. We were eager to interest these architectural drawing classes in a competition for the best design of a small home in an effort to discover the results of outside stimulus. It was interesting to conjecture whether this would be the means of encouraging a desire for better architectural designs, for this was not an exceptional group that we were working with, but quite the average.

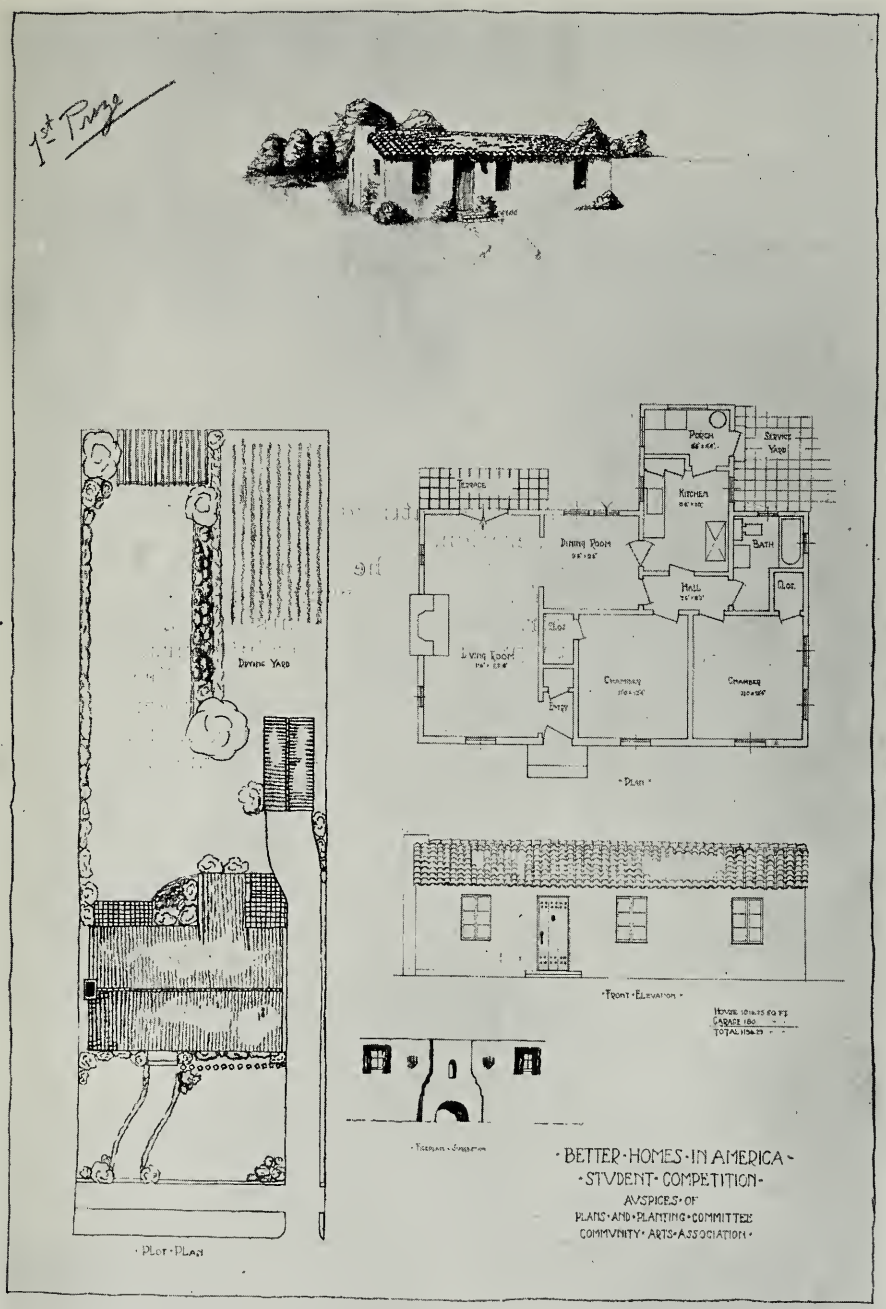
We were questioned as to whether this competition was an attempt to prove that student work was on a par with the professional. Nothing was further from our thoughts, for we have always had as our ablest allies and counselors a large group of local and non-resident professional men. Our hopes embraced theirs, since we believed that through this student competition we could demonstrate that architectural appreciation was not above the head of the layman, but an art to which every citizen could contribute his part; that the canons of good judgment could belong to the people.

The subject of the competition was a house, Spanish-Colonial in character, the purity of the design to be a governing factor in making the awards. The purpose here was to encourage the preservation of our architectural traditions, for it is a matter of great importance to instill a love and appreciation for the style of building so peculiarly suitable in Santa Barbara because of climatic and historic reasons. In addition to the technical requirements of the competition, we asked that the drawings be accompanied by a statement from the instructor that no professional assistance had been rendered and that the work as given to us was the individual work of the student.

The rules were presented to the classes January first, and on May first we received twenty-six creditable designs. The jury consisted of three professional architects, one landscape architect and one layman. This layman was a woman keenly interested in the convenience of house arrangement. We offered the competition as a part of our contribution to the Better Homes in America Week Campaign; and gave a public exhibition of all drawings submitted. All who viewed the exhibition



BETTER HOMES STUDENT COMPETITION, SANTA BARBARA
SUBMITTED BY RUTH SENTELL AND AWARDED 1ST PRIZE



BETTER HOMES STUDENT COMPETITION, SANTA BARBARA
SUBMITTED BY JACK MITCHELL AND AWARDED FIRST PRIZE

were impressed not only with the expression of individuality in the designs, but by the splendid restraint in ornamentation. The required plot plans were well thought out, considering that these students were untrained in the art of landscaping.

Someone in viewing the plans remarked that the students must have consulted with their mothers in regard to the convenience in arrangement of such built-in fixtures as the ironing board, cupboards, etc., for in almost every instance these articles were thoughtfully placed. Herein lay one of the salient results of the competition. The students had been compelled so to consider their homes that their plans were developed with care. They gave heed, perhaps for the first time, to convenience in kitchen arrangement and adequate closet space, to ventilation and a thousand details that home planning involves. The family must have been drawn into the discussion, for certainly the needs of the entire family were adequately provided for.

At a general assembly in the High School the awards, which consisted of appropriate books and certficates, were given by Mr. Bernhard Hoffmann, President of the Association and chairman of the committee sponsoring the competition. The success of the whole undertaking has been largely due to the open-minded attitude of the school department heads and their helpful co-operation.

It is interesting to note here that the winner of the High School First Prize was a student of machine drawing and this was his first problem in house design. Mr. Mitchell represents one of the rare instances in that he hopes to prepare for the architectural profession. Miss Sentell, the winner of the State Teachers' College First Prize, became interested in architectural drafting through being employed as a stenographer in a Santa Barbara architectural office, and in order to enter their drafting room took a part time course in mechanical drawing, together with the architectural drawing. Her winning design also represented her first efforts in small house designing.

The splendid efforts which were achieved were not the result of a monetary reward—this was purposely avoided. The diverse interest in the competition carried the discussion of better architecture and what it means to the community into many new channels. We feel confident we have demonstrated the practical purposes of architecture. It has been translated from the purely esthetic to the utilitarian. It has, perhaps, given many an opportunity to grasp an appreciation of the fundamentals upon which architectural discrimination is based.

* * * *

A Plea for Hollow Concrete Walls

The Franciscan Fathers, building of the poorest rubble, often used nothing but mud for mortar. They built very thick walls. One reason was earthquake conditions. Well, the resultant reveals on some of their old buildings are stunning. We have made the mistake of too dimensional copies of many of their buildings without those reveals, I am sorry to say. Of late there has been slowly developing, as a result of recent processes, a series of buildings made of hollow concrete walls. I built one building with a thirty-inch wall. The outside wall was four inches thick, inside four inches thick. The webs are four inches wide, leaving twenty-two inches for an air space. Others are doing similar things. This is a natural local development. It gives those reveals and that character which the strong sunlight of the southwest demands.—Myron Hunt, Architect, Los Angeles.

PORTFOLIO
RECENT WORK OF
Messrs. Noerenberg and Johnson
Los Angeles

YOUNG AND McALLISTER BUILDING, LOS ANGELES
Noerenberg and Johnson, Architects

BUILDING FOR WESTINGHOUSE ELECTRIC & MFG. CO., LOS ANGELES
NOERENBERG AND JOHNSON,
ARCHITECTS

LOS ANGELES RAILWAY BUILDING, LOS ANGELES
NOERENBERG AND JOHNSON, ARCHITECTS

VAN NESS SCHOOL BUILDING, LOS ANGELES
Noerenberg and Johnson, Architects

BUILDING FOR LOS ANGELES INVESTMENT CO., LOS ANGELES
Noerenberg and Johnson, Architects

Right of Unlicensed Architect to Enforce Contract for Fees

By LESLIE CHILDS

THE question of the right of an unlicensed architect to enforce a contract for his fee, in the face of a statute requiring architects to obtain licenses, was passed upon in the recent Washington case of Sherwood vs. Wise, 232 Pac. 309. The facts and circumstances which culminated in the action being, in so far as material here, as follows:

In this case one Travis, an architect, entered into a contract with Wise and wife to prepare plans and specifications and to superintend the construction of an apartment house. Travis executed his contract and upon completion the building cost $32,600. A dispute thereafter developed over the amount of his fee. Travis claimed he was to be paid ten per cent of the total cost of construction, while Wise and wife claimed a fee of $2,500 had been agreed upon. Travis subsequently assigned his claim to Sherwood, and the latter brought the instant action to enforce payment.

Upon the trial of the case there was evidence to the effect that at the time Travis entered into the contract he was not licensed as an architect as required by the law of Washington. Wise and wife thereupon defended the action on the ground, among other things, that Travis and his assignee Sherwood, were in no position to enforce the contract for the payment of the fee for services rendered by Travis as an architect. The Washington statute involved provided in substance as follows:

That all persons before assuming the title of architect should obtain a certificate of qualification to practice as an architect. For the purpose of carrying into effect the provisions of the law a board of examiners was provided to examine such applicants as the act required to be examined. The act also provided for certain penalties that might be imposed upon any person violating its terms.

On this state of facts the trial court allowed Sherwood, as Travis' assignee, to recover a certain amount on account of Travis' work in superintending the construction of the building. However, a right of recovery for anything for architectural services was denied, on the ground that Travis could not enforce payment for such services because he was unlicensed when the contract was entered into.

On appeal to the Supreme Court of Washington this judgment was reversed and a decision rendered that Travis should be allowed to recover his fee as an architect despite his noncompliance with the statute. Following this judgment, a petition for a rehearing was entertained and the court, after careful consideration, overruled its former holding and affirmed the judgment of the trial court. In stating its reason for so doing the court, after an examination of the terms of the statute, in part, said:

"The language of the act manifestly expresses the legislative intent that it shall be unlawful for one not holding a license certificate to assume the professional title of architect, and as such enter into a contract to render architectural services. Now, that is just what Travis did with reference to the construction of this building.

"He not only held himself out to Wise and wife as being an architect possessing architectural skill and learning prior to the making of his contract of services with them, but he prepared plans and specifications in such detail as is usual for the construction of buildings of the dimension and cost of the one in question. The several sheets

of the drawings of the proposed building, of which the specifications were a part, were signed by Travis as architect. * * *"

Following the foregoing review of the record as to the acts performed by Travis, the court directed its attention to the question of whether or not there could be a recovery of fees for the services rendered as an architect. In this connection the court said:

"We think there is no escape from the conclusion that the contract for architectural services between Travis and Wise and wife, upon which Sherwood seeks recovery, was illegal and void and wholly unenforceable, leaving Travis and Sherwood, his assignee, without legal right of recovery thereon.

"We think it needs no argument or citation of authorities to demonstrate that this statute, providing for inquiry into the learning and skill of the applicant, and prescribing penalties for the assuming of the title of architect, and contracting as such without a license certificate, was enacted for the protection of the public and the prevention of improper persons assuming the title of architect, and contracting for services as such. * * *"

But, it was contended, among other things, that the statute requiring architects to obtain license certificates was unconstitutional. In reply to this the court said:

"We think that architecture is generally recognized as a profession, and that its practice involves mental rather than manual skill, having to do with things that concern the safety and well-being of the public in this pre-eminently building age, and that therefore the Legislature may provide for the licensing of those who desire to assume the title of architect, and hold themselves out to the world and contract for their services as such. We cannot see any constitutional objection to this law."

Following the foregoing statement of its conclusions, relative to the legality of the contract made by Travis in the absense of a license as required by law, and the constitutionality of the law in question, the court in making clear the scope of its holding used the following language:

"We are not holding that an owner may not employ a builder to construct a building for him without the services of an architect, but are only holding at this time that one who holds himself out to be and assumes the title of architect, and contracts for his services as such, without being licensed as this law requires, cannot recover compensation for such services, because in so holding himself out, and in so contracting, he violates this law. * * *"

In conclusion the court affirmed the judgment of the trial court in all things, holding, as outlined in the opinion, that while Travis, or Sherwood his assignee, could enforce payment for the work performed by Travis in superintending the construction of the building, there could be no recovery for the purely architectural services rendered by Travis under his contract. This for the reason that he was not licensed as required by the Washington statute when the contract was entered into.

* * * *

Owner Is Responsible

The city attorney of Santa Barbara has ruled that the owner is responsible for the acts of his agents and that the building inspector is not concerned with the phases of ownership. The ruling evolved as a result of a shed being erected on the property of a lumber company which contended the builder instead of the company should be held responsible because the builder was erecting the shed.

Test of Lumnite Concrete Pile Driven Twenty-Four Hours after Casting

By HARLAN D. MILLER
Bridge Engineer for California Highway Commission

AN INTERESTING test, which may prove of great value in reinforced concrete pile foundation construction was recently made by the bridge department of the California State Highway Commission at Pismo, San Luis Obispo County, where two state highway bridges are under construction. A concrete "test" pile was cast, using Lumnite cement instead of ordinary Portland cement. Twenty-four hours after the pile was cast it was driven forty-five feet in the ground to refusal. In this instance, Lumnite cement seems to have developed, at twenty-four hours, a greater strength than most Portland cements at twenty-eight days. It requires about the usual time to "set," but, after "setting," Lumnite develops maximum strength very rapidly. One of its principal raw materials is aluminum ore.

It was not possible to have made a strength test of the concrete used in the pile at the age of twenty-four hours, but two 6 x 12-inch sample cylinders of the concrete were tested within forty-eight hours after casting. The 200,000-pound state testing machine did not break either of the test samples, indicating a strength in excess of 5,600 pounds per square inch. This test concrete, after forty-eight hours, had a strength at least equal to ordinary Portland cement concrete at an age of three months.

A number one Vulcan steam hammer was used to drive the test pile, which was forty-seven feet long and eighteen inches square. The usual time of curing before driving concrete piles is twenty-eight days, but the pile used at Pismo was driven exactly twenty-four hours after casting. It required 643 blows of the hammer to drive the pile forty-five feet in the ground to refusal. The pile apparently was not injured in any way by the rough treatment to which it was subjected, except that under the blows of the hammer there was a little spalling at the top.

The value of a test of this kind is obvious. In the future, whenever concrete piling is to be used in the construction of bridges or other structures, a "test" concrete pile can be driven on short notice and exact conditions determined upon. This is not always possible with wooden test piles, which are generally used to obviate waiting twenty-eight days for a concrete pile to cure. Wooden test piles are sometimes unsatisfactory because of the difference in size and penetrating power. The driving of such test piles frequently gives the wrong impression, and concrete foundation piles are cast an improper length as a result. The use of a concrete pile as a "test" pile is a true guide for determining the proper length for other concrete piles.

* * * *

Who Is Responsible?

The consensus of opinion generally among building contractors of all classes is that high wages will eventually have a serious effect upon the volume of construction work to be done in any community. Many, however, believe that when applied to the cost of construction that the percentage of increase would not be serious as compared with costs of material if mechanics would give value received for the high wages they are being paid.

Oil and Gas Burning Furnaces for Domestic Use

THE tremendously rapid development of the domestic oil burner industry during the past two years has apparently caught the boiler and furnace manufacturers asleep. Twelve months ago, a New York executive, building a large home in a Long Island suburb, purchased a heating boiler, says a writer in the Heating and Ventilating Magazine. As several of his friends had used oil burners during the previous winter, and their reports had been uniformly satisfactory, this man decided he would burn oil. He was able to make personal contact with the engineering department of the company manufacturing the boiler he had bought, and he asked them to recommend an oil burner. The reply was that the company would not recommend any particular oil burner, or even speak encouragingly of oil burners in general. In fact, they spoke pretty disparagingly about oil burners. This man told me that he had just called again at the office of the same boiler manufacturer, and was informed that they recommended the —— burner very highly. This burner has been on the market for many years, and has not been materially changed in the past two years.

Thus, in twelve months, this manufacturer has completely changed his attitude. Now, what was the reason for this change? Was it an engineering reason or based on commercial expediency? Looking over the field of boilers presented today as applicable to oil burners, one is almost forced to the conclusion that commercial considerations dominate the situation.

We find several boilers or furnaces offered for sale bearing the name "Oil Burning Boilers." Are these boilers really designed to get the best results from the use of an oil burner, or are they merely the old coal-burning boilers with a new front plate, bearing the words "Oil Burner," and put out thus to fill the demand created by the rapidly growing use of oil fuel? It is truly remarkable how little specific engineering information can be secured from boiler manufacturers as to just how, and in what wise, their boilers are particularly adapted to the use of oil. The engineer of one company, when asked what was the proportion of direct to indirect heating surface, replied, with a shrug of his shoulders, "fifty-fifty would about hit it."

If heating is an exact science, or anywhere near exact, such an answer does not carry much weight. The question would seem to be: "Do we, in burning oil in a household boiler, use a source of heat of the same general characteristics as we do when burning coal, or are the methods of heat production entirely different?" In the former case, it would seem logical that the same boiler giving high efficiency with coal would show equally high efficiency with oil. In the latter case, it would appear that with the same boiler, the two fuels could not be utilized to an equal degree. We should, therefore, study combustion, as produced by oil, and combustion as produced by coal, when used in a boiler or furnace for domestic use to determine the facts.

The latest and, in may ways, the most significant event in the heating field is the development of a combination gas and oil burner. The whole purpose of the new design is to permit the gas companies to flatten their peak loads of gas consumption. By going from gas to oil as the cold becomes intense, these dreaded peaks will not only disappear, but will produce valleys which the gas companies stand ready to fill through increased industrial sales at these particular times. This is a consummation devoutly to be wished by the gas men and is

the cause of their rejoicing over the opportunity it apparently affords them of assuming a commanding position in the heating industry.

Not the least of the advantages claimed for this ingenious arrangement of a gas-oil burner is the fact that a comparatively small supply of oil will be sufficient to take care of a given installation, thus obviating the need of a large, outside oil tank, with its attendant cost and expense of installation.

It is of interest to add that the Doherty interests, under whose auspices this new burner has been developed, are about to launch a publicity campaign on a national scale which is intended not only to promote the sale of their gas-oil burner, but to give the gas industry its place in the sun in the heating field.

* * * *

Some Thoughts On Cleaning and Varnishing Oak Flooring

By HARRY D. THORN

BEAUTIFUL floors are a constant joy to those who live and look upon them. Other floors are a daily disappointment. They are depressing and make the whole house seem untidy.

The proper preparation of the surface of oak flooring is important before applying any kind of varnish. The wood is porous—filled with tiny pores—and its pores should be sealed to a desirable evenness. On close grain wood—maple, birch, cherry, pine, cypress—varnish may be applied direct. On open grain wood use a good paste filler. Wipe the filler off clean, across the grain, 15 or 20 minutes after it has been applied. When it is dry and hard, say in 24 hours, sandpaper lightly with 00 sandpaper. **Do not use a liquid filler.**

Now put on a coat of good floor varnish and let it dry 48 hours. Avoid dust and keep the room dry and warm if possible. Add the second coat of varnish and after 48 hours rub lightly with steel wool or 00 sandpaper. Add the third coat of varnish.

For glass finish leave final varnish coat as applied.

For dull finish, rub final coat with powdered pumice and crude oil on felt or burlap, or use emery cloth and oil. Wipe oil and pumice off thoroughly.

A cold room, a damp room, a dusty or draughty room cannot be as perfectly varnished as a room should be under proper conditions. You should varnish in a clean room and a dry, warm and quiet atmosphere to obtain a satisfying finish.

To clean a properly varnished floor, wipe it with a cloth dampened in luke-warm water. It is unnecessary to scrub, scald, oil or soap a varnished floor to keep it clean. Its hard surface will not permit dirt to reach and impregnate the wood.

It is, therefore, easy to clean and always sanitary. It is a good house practice every six months to lightly dampen a cloth with kerosene and wipe soiled varnished floors vigorously.

When a varnished floor begins to show the effects of hard wear—once a year or oftener, if necessary—sandpaper it lightly and put on a new coat. The habit of doing this every spring in city and country houses and in office buildings preserves the fresh, elegant appearance of good floors. We recommend such regular treatment as well for its ultimate economy as for its preservative and beautifying value.

To clean an old, dirty hardwood floor successfully, one should first

know of what the dirt and discoloration consist or how they were produced. This is not always possible in the case of strange old floors. Sometimes a thorough scrubbing with warm water, soap and washing soda will remove the accumulated wax, greasy dirt, stain and oils. If it does not and it becomes necessary to remove old coats of varnish or paint down to the natural wood, then use an effective paint and varnish remover, which will expose the wood and enable you to wipe all accumulations off with a rag dipped in naphtha, after you have thoroughly scraped or wire brushed off the remover.

The remover spread on the floor at night enables you to wire brush or scrape off old paint, varnish, wax and other finish next morning. But care should be exercised to wipe off with a rag and naphtha all the remover and softened dirt and finish it may contain, and allow the floor 24 hours to dry before applying a new coat of varnish. If the grain of the floor has been raised or other unevenness produced, sandpaper with 00 paper. There should be nothing soft, damp, rough or dusty between varnish and the wood. Whether scrubbed or otherwise cleaned, floors should be dried 24 hours in a temperature of 70 degrees or warmer before varnishing. This temperature should also prevail while the varnish is being applied and drying. Keep doors and windows closed to prevent drafts along the floor from depositing dust upon or chilling the fresh varnish.

* * * *

New Method for Measuring Strains in Concrete Structures

SOME time ago the Bureau of Standards, Department of Commerce, brought out what is known as an "electric telemeter" for measuring changes in the length of structural members produced by variations in the load upon the structure. The operation of the telemeter depends upon the variations in resistance to the passage of an electric current of a stack of carbon disks. This is the same principle as that employed in the microphone in the transmitter (the part we talk into) of the telephone. There is, therefore, nothing new in the principle employed, but the bureau was the first to apply this principle to a precision measuring instrument.

Recently a new use has been found for this device in the measurement of the strains in mass concrete. For this purpose a special cartridge has been designed which houses the stack of carbon disks and which is embedded in the concrete at the point where the measurement is to be made. Wire leads extend to the surface and are carried to some convenient point where the indicating instruments are placed These instruments are calibrated to show any deformation in the concrete due to loading.

The instrument will shortly be used in an investigation which is to be carried out by a special committee sponsored by the Engineering Foundation on a dam now being built for experimental purposes near Fresno.

* * * *

How the Building Dollar is Spent

The fallacy of immense profits to contractors has been exploded by an interesting chart prepared by the Marine Trust Company of Buffalo which shows that out of every dollar spent in construction only 2.1 cents find their way into the pockets of the contractors as profit.

The chart is based on income tax returns filed by persons engaged in every class of construction throughout the country. It shows that 68.3 cents go for wages and materials; 20.2 cents go for fuel, supplies, estimating, engineering, rent and miscellaneous; 2.2 cents go for depreciation; 4.8 cents go for salaries and 2.3 cents go for taxes and interest. There is no other business in the world that shows as small a percentage of profit where the risk element is so great. Any one of a score or more things may happen on a job and the small margin of profit is turned into an actual loss.

* * * *

Decorative Value of Window Shades

EVERY little detail added to a house will add to or detract from its appearance, and this is as true of window shades as any other item. Usually, exterior walls are just blank spaces, and color at the windows gives just the touch that will add warmth and attractiveness to the design.

There is also real sales value in having correctly colored shades for windows, especially so if the house is erected for sale. Shades instantly give the house a homey look instead of a cold, uninviting appearance. This appearance is not only on the exterior, but also in the interior, as when a prospective buyer walks through a new house it looks empty and forlorn, but the addition of window shades takes away, to a great extent, the deserted air and gives it the homey atmosphere.

Modern shade manufacturers are now producing window shades in a large variety of coloring and textures. It is now possible to obtain duplex shades with one color on one side and another on the reverse side.

The color of the shades facing the interior of the house should harmonize with the wall decoration of each room. Now, as all these rooms face the street, the shades should, of course, all be of one color, so as to harmonize on the exterior. Here is where the duplex color shades solve the problem, allowing color harmony from outside as well as within.

Next to having well made shade material of the proper color, it is necessary to have a proper and efficient shade roller with fittings. Several manufacturers are now making high-grade articles of this sort, and the best results are obtainable at moderate cost.—Building Age.

* * * *

Students Win Honors

Within the last year students in the School of Architecture, University of California, have won signal honors both in the United States and abroad, in open competition with the best that other schools could produce.

In the last exhibition held by the American Institute of Architects in Washington, D. C., Scott Haymond, medal student at Berkeley, and California entry, took second prize, placing before all other institutions in the country except Columbia.

Ernest Born, a graduate in 1922, now studying in Rome, won second place in the annual competition of the American Academy at Rome this summer.

Angelo de Sousa, a graduate student, won first place and a prize of $500 in a national open competiton for a small house design, in addition to placing second in another contest.

Michael Goodman, a young Russian in the first year of his graduate work, is another student who has won recognition in the field of architectural drawing and illustration.

For the last year he has supplied all the cover designs of the California Monthly, alumni periodical, and is now engaged on a series of drawings of the new Hearst hall.

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THE building material we have in plenty is sand and gravel. It is sand, gravel and cement and the plastic results that follow that naturally and properly are going to produce the local color which perhaps in time will give us a genuinely distinctive note in our Southern California architecture.—Myron Hunt.

GOOD TRAINING, GOOD ARCHITECTURE

In a profession such as architecture, men learn by studying examples of good practice. There are no definite rules to follow in order to produce results. Through centuries of experience certain methods of procedure have been followed in order to produce definite results. Blind copying, however, will never make things look right. Rules exist merely to emphasize the exceptions.

Bold men deviate. Provided that these men are sufficiently grounded in the rules their deviations generally are marked with success. Failures result only when the innovator does not base his variations upon well-established practice. The pitched roof belongs in a snowy or more or less rainy country. The flat roof belongs in the country where the evening breeze is appreciated after a hot day.

It is one thing to give the owner that which he most desires in the way of arrangement. It is another thing to add the touch of the trained designer to the exterior and thus show the work of the student and artist. A contractor or builder may be able to design a house that is conveniently arranged, but one must look to the architect if real beauty is to be achieved. A good architect can combine utility and beauty, but we have yet to see this happy combination in a contractor's stock-plan house.

"SHACKLING THE GRINDSTONE"

The United States was founded with the idea that every citizen should enjoy the greatest possible amount of personal liberty. One by one, the priceless heritage of individual liberty has been whetted away; a man can't pack a gun any more in New York without a license; he can't grow grapes and turn them into wine for his fellows generally; and now things have reached the point—have reached the point, mind you—where even the element of selectivity in a free-born American's choice of grindstone is being eliminated in the all powerful name of standardization.

Hereafter the nation must get along with only 459,000 kinds of grindstones. Two hundred and fifty-three thousand others are to be striken from the mail order catalogues. To be sure, this is not an autocratic decree of the government, but the result of a decision of the manufacturers, made in accordance with Secretary Hoover's program to eliminate waste from industry. The decision is in line with the efforts in the last few years in other industries, such as the agreement of the garment

workers to limit varieties and styles of their more staple products and of the brick manufacturers to cut down the number of styles in face and common brick, etc.

The present 712,000 kinds of grindstones grew out of the original stones on which the ancestor of all hunters sharpened his knife and the first of husbandmen whetted his sickle. Tubal Cain, that gifted son of Lamech and Zillah, must have had a grindstone when he taught primitive man to make implements of iron and brass. Young Abel may have turned Father Adam's grindstone when all the time he wanted to go fishing or be a pirate. Generations of farm boys continued young Abel's job down through the ages until an inventor relieved them by furnishing a contrivance for revolving the stone wheel with the foot. And all the time the styles and varieties of grindstones grew as man's occupations and trades increased and his demands for his comforts or conveniences multiplied.

Last year, says a writer in the New York Evening Sun, the United States produced about $1,250,000 worth of grindstones from its quarries. Its best are said to be made from layers of carboniferous sandstone found near Berea, Ohio. Canada has two Grindstone Islands which took their name from their chief product, and in the world there are a Grindstone City, a Grindstone Bay, several Grindstone mountains and a number of Grindstone cliffs. Besides, there are grindstones made from emery and from carborundum. Some have a diameter of only a fraction of an inch, while one monster of emery has a diameter of almost four feet, whirls around at the rate of 6,000 feet a minute and eats up the finest of tempered steel.

There are few industries in which the use of the grindstone is not an indispensable part. It sharpens the tools that cut away mountains and lay the foundations of cities, and it polishes the daintiest of the artisan's handiwork and the barrels of the sportsman's fowling piece. It grinds the points of forks and steel pens and of pins and needles. It has its part in finishing ornamental glasses and lenses, and in bringing out the brilliance of precious stones. There is little wonder that it has such a variety of kinds and forms or that their number was increasing with each day.

But in the reduction of the variety to 459,000 there is nothing to indicate the elimination of the kind which from time immemorial has been grinding away at the noses of all humanity.

BUILDING interests in Paris are demanding the privilege of erecting structures of enormous height, and I think that it is of world-wide importance that the tall building should be proscribed, just as it should be in Rome, in Venice, in Athens, in London, in all those cities which have been conceived upon a moderate scale of height and developed along that line. It is not that we are lacking a sense of confidence in modern tendencies. But it is not quite yet time to demolish Notre Dame de Paris to make room for tall buildings.—G. F. Sebille, Architect, Paris.

OPPORTUNITY FOR THE A. I. A.

It is reported that the Federal Government will spend for public buildings $50,000,000.00 in Washington, D. C., and $100,000,000.00 throughout the rest of the United States.

The American Institute of Architects has an opportunity here to justify its existence in seeing that these vast amounts of money are spent through its members.

The Bureau of Architecture in Washington should standardize construction and generally direct and supervise the preparation of plans for these Federal buildings, but the actual drawings themselves should be in the hands of the many competent architects throughout the United States. Thus the Bureau would have all it could do and the worthy architects would be given the work that

is due them as citizens. In addition, the public at large would be greatly benefitted by the combined efforts and the cost would doubtless be less than if the Bureau handled the entire work .

A definite plan should be formulated by the Board of Directors of the Institute and presented to the Washington authorities with such backing of the National Chamber of Commerce, Bankers Association, National Contractors Organizations, etc., as is necessary to give the suggestion due weight.

—CHARLES PETER WEEKS.

BOOK REVIEWS

Edited by
CHARLES PETER WEEKS

SMALL HOUSE DESIGNS, Published by Community Arts Association, 33 E. Canon Perdivo street, Santa Barbara. Price, $1.50.

The second edition of this popular book has just been published. A number of new designs have been added and the text has been enlargd upon. The volume offers a fine suggestion for a Christmas gift. All of the houses illustrated are of the bungalow, Spanish or English types, having from four to six rooms.

SPANISH HOMES OF CALIFORNIA, Published by the Roy Hilton Company, 800 Kress building, Long Beach. Price, $1.00.

This book of fifty pages contains a selection of really good Spanish homes of moderate cost that have been built in Southern California and designed by capable architects. Floor plans and sketches add interest and value to the presentation. The hackneyed plan has been eliminated. The cost of the houses illustrated in the book vary from $3,000 to $10,000. The author has dedicated the volume to "better building and better architecture in America, made possible by the daring of the Southern California architect, who has created a new style based on the solid and substantial precedents of many generations in Spain and Latin America."

STREET TRAFFIC CONTROL, by Miller McClintock; McGraw-Hill Book Company, Publishers, New York City, 1925.

Street Traffic Control is a book well written and well worth the reading. Prof. McClintock has had a wide practical experience in traffic control work, and his most outstanding and successful service has been in connection with the Los Angeles Traffic Commission, where he has accomplished results beyond the expectations of the commission and the public.

Street Traffic Control is a very thorough and lucid review of the various methods of traffic control since the development of the automobile. Its main value, however, is to be found in the wealth of statistical material never before assembled in connection with the subject and the very keen interpretation of the facts and experience of various communities will prove valuable in bringing new life and broader views to the communities which have failed to look upon traffic control as a highly technical and important social problem.

Chambers of commerce, city engineers, city councilmen and others who deal with traffic problems will find the book of very great value, both as a guide in the study of local problems and in finding solutions to these problems. One of the outstanding features of the book is the fact that the author recognizes the essential requirements of city planning as fundamental to the permanent solution of traffic problems.

—CAROL ARONOVICI

Boilers for Heating Purposes

The practice has become prevalent for architects to specify the use of low-pressure boilers for apartment and office building heating plants. In doing this they have no doubt felt that such buildings would always purchase their power and that the cheaper boiler would give equal satisfaction.

The difference in the initial cost of a high and a low-pressure boiler is small, representing but a small per cent when the total cost of the heating system is considered. Due to the stronger structure it would seem that on the basis of life and freedom from operating troubles, the high-pressure boiler should be the logical choice.

A second factor influencing the choice of a high-pressure boiler, is that while energy may be purchased when the building is first erected, it is impossible to say with certainty that the installation of generating units will never be advisable. There are many buildings that have found it advisable to generate their own power or to install a block plant. With these factors taken into consideration, sound judgment points to the more general use of high-pressure boilers in heating plants.—Editorial in Power.

With the Architects

Building Reports and Personal Mention

Twenty-Seven Story Office Building

Plans are being prepared by Architects Schultz and Weaver of Los Angeles and New York for a twenty-seven story, Class A office building to be erected on the southwest corner of Montgomery and Sutter streets, San Francisco, which is the site of the former Lick Hotel. This is the second architectural commission obtained by this firm in San Francisco, the first being the million dollar addition to the Hotel Clift. Mr. H. J. Brunnier has been retained as structural engineer of the Montgomery street building, while Mr. Ray Phillips of Los Angeles will be the mechanical engineer. The new structure will be forty feet higher than the Pacific Telephone and Telegraph building, which up to the present time holds the distinction of being the tallest office structure in San Francisco.

Twelve-Story Apartments

Architects Bakewell & Brown, 251 Kearny street, San Francisco, have been commissioned to prepare plans for a twelve-story community apartment house at Broadway and Gough streets, San Francisco, for Mr. George Wagner et al. This same firm of architects have completed plans for the San Francisco Art Association's new building at Chestnut and Jones streets, estimated to cost $220,000, and they are at work on plans for St. Joseph's Hospital, a $750,000 structure of six stories and basement which is to be built on Buena Vista avenue.

Architect for Rousseau Buildings

A commission has been given to Architect H. C. Baumann, 251 Kearny street, San Francisco, to design some of the more important work planned by the Marion Realty Company, of which Mr. Arthur Rousseau is president. Plans have already been completed by Mr. Baumann for a five-story reinforced concrete apartment house which the Marion Realty Company will build at Franklin and Sacramento streets, and for a four-story apartment house in the same block. Other buildings of equal importance are being planned.

Alterations to Building

Plans have been completed by Architect A. H. Knoll, Hearst building, for alterations to cost $50,000 to the six-story store and loft building on the south side of Post street adjoining the Baker building, San Francisco.

Stockton Office Building

Architects Mayo, Powell & Bissell, 21 S. San Joaquin street, Stockton, have been commissioned to prepare plans for a twelve-story Class A office building to be erected at Miner and California streets, Stockton, at an estimated cost of $600,000. The owners are the Stockton Medico Dental Company, Inc. The same architects are preparing plans for a two-story store and office building for the Central California Investment Company, estimated to cost $25,000.

Architect for Monterey Hotel

Mr. Charles F. Whittlesey, who designed the Pacific and other office buildings in San Francisco some years ago, has been commissioned to prepare plans for a seven-story reinforced concrete hotel at Monterey for Mr. Jean Juillard, formerly assistant manager of the Del Monte Hotel. The structure will have approximately 150 rooms and will cost $400,000. Mr. Whittlesey is at present residing at 6533 Hollywood boulevard, Los Angeles.

Steel Frame Apartments

Architect William I. Garren, De Young building, San Francisco, has completed plans for a five-story steel frame and brick apartment house to be built on the north side of Sacramento street, San Francisco, for the Chin Pack Company. There will be fifteen three and four room apartments. The structure is estimated to cost approximately $70,000.

Marine View Home

Architect Henry C. Smith is preparing plans for a marine view home for Mr. Milton S. Ray of the Ray Oil Burner Company. The house, which will be of Spanish design, will occupy a hillside lot at Broadway and Baker streets, San Francisco, the property having been purchased by Mr. Ray from Secretary of Commerce Herbert Hoover.

Oakland Building

Architect Francis H. Slocombe, 363 Seventeenth street, Oakland, has completed plans for a two-story, Class C store and loft building to be erected at Tenth and Harrison streets, Oakland, for Chamberlain & Proctor of San Francisco.

Oakland Women's Club Building

The Oakland Federation of Women's Clubs will shortly start a campaign to raise $1,000,000 for a club building for its 6,000 members. Mrs. Peter J. Kramer is chairman of the building committee.

Tax for University Architect

An architect employed by a board of regents of a state university as university architect, has been held not to be a state employee, so that his compensation is subject to federal income tax, in a ruling just made by the Income Tax Department, according to M. L. Seidman, tax expert, of Seidman & Seidman, certified public accountants.

"In the particular case in which the ruling was made," Mr. Seidman explained, "an architect was employed by the Board of Regents under a ten-year contract. His chief duties were to prepare and to submit to the board plans of the campus, location of permanent buildings, drives, walks, etc., and to personally supervise all the work undertaken. He was to receive as compensation an amount equal to a specified percentage of the cost of all material and labor actually wrought into all buildings erected during the life of the contract.

"The Income Tax Department held that the position occupied by the architect was purely of contractual nature and that as the board had no right to exercise control over the manner in which the architect's work was to be performed, the relationship of the architect to the university was that of an independent agency engaged to accomplish certain specific results and not that of an employer and employee. Accordingly, the architect's compensation was held to be subject to the federal income tax."

Architect Loses Suit

The suit of Architect F. A. S. Foale, of Sacramento, against Hart Brothers, lunch room proprietors, for approximately $19,000 alleged due on a contract, was disposed of by Superior Judge Malcolm Glenn when he found for the defendants. Mr. Foale complained that Hart Brothers employed him to draft plans suitable for a building of three, five or twelve stories, to be erected on a lot adjoining the Weinstock-Lubin building on K street, Sacramento. He charged that after he had drawn the plans, Hart Brothers changed their intentions and, instead of erecting the proposed building, employed another architect and remodeled the structure on Tenth street, now occupied by them.

The plaintiff admitted having been paid approximately $1,900 for the plans, but sued for the estimated amount he would have earned had the original plans been carried through.

Back From Mexico

Architect C. O. Clausen of San Francisco has returned from Mexico City, where he went with an excursion party of California Shriners.

School Architect Returns

Architect Wm. H. Weeks and son, Foster Weeks, have returned from their trip east, which included a visit to many of the large cities and an inspection of some of the more recently built school houses in each locality. It is no exaggeration to say that the office of Wm. H. Weeks, of San Francisco and Oakland, has designed more school houses in California than any other architectural firm on the Pacific Coast. An issue of The Architect and Engineer will be published in the near future showing some of the more important schools designed and built under the supervision of Mr. Weeks and his staff of co-workers during the past two or three years.

Engineer Moves

Mr. Walter S. Leland, mechanical engineer, has moved from 664 Howard street to 532 Natoma street, San Francisco. Mr. Leland handles the business in Northern California and Western Nevada for the Bishop and Babcock Company, heating specialties and ventilating equipment; the Erie City Iron Works, tubular and water tube boilers, furnace grates and heating plants, in addition to being representative for the Birchfield Boiler Company and the Stewart Heater Company.

Mangrum & Otter Building

Plans have been completed by Structural Engineer T. Ronneberg, Crocker building, San Francisco, for a one-story, basement and mezzanine steel frame and concrete store and loft building to be erected on Mission street, near Eighth street, San Francisco, for Mangrum & Otter, Inc. The building, which has been designed to carry additional floors later on, will contain spacious show rooms, offices and a garage.

Architect Leonard Ford Busy

Work in the office of Architect Leonard H. Ford, Coit Hotel building, Oakland, includes a six-story, steel frame, Class C brick hotel estimated to cost $150,000; a three-story frame and brick veneer store and apartment building at University avenue and California street, Berkeley, for Litchens & Williams, and a store and office building on San Pablo avenue, Berkeley.

Veterans' Memorial

Architect Henry H. Meyers, Kohl building, San Francisco, has been commissioned by the Alameda County Board of Supervisors to prepare plans for a War Memorial building at a cost not to exceed $165,000. The building will be located next to the Oakland Municipal Museum at Nineteenth and Harrison streets, Oakland.

To Design School Additions

The San Francisco Department of Public Works has commissioned the following architects to prepare plans and specifications for additions to school buildings:

Sunnyside school, S. Heiman, architect, 57 Post street, San Francisco.

Jefferson school, Miller and Pflueger, architects, Lick building, San Francisco.

Francis Scott Key school, Joseph J. Rankin, architect, 57 Post street, San Francisco.

Madison school, Sylvian Schnaittacher, architect, 233 Post street, San Francisco.

Commodore Sloat school, John Reid, Jr., architect, 60 Sansome street, San Francisco.

Dodge A. Riedy Busy

New work in the office of Architect Dodge A. Riedy, Pacific building, San Francisco, includes a two-story reinforced concrete commercial garage at Third and Folsom streets, San Francisco, for Mr. John Jerome and a two-story frame and stucco flat building to be erected on Baker street for Mrs. Duane, at an estimated cost of $15,000.

Twenty-Story Office Building

Architect George W. Kelham of San Francisco is preparing preliminary plans for a twenty-story Class A store and office building to be erected on the site of the present Russ building at Montgomery and Pine streets. The structure will represent a total investment in excess of $5,000,000.

Apartment House

Architect D. C. Coleman, 110 Sutter street, San Francisco, has prepared plans for a three-story frame and stucco apartment house for the William Helbing Company to be built on the south side of Chestnut street, near Van Ness avenue, San Francisco, at an estimated cost of $60,000.

Architect Jorgensen Weds

The marriage of Architect Mark T. Jorgensen of San Francisco to Miss Alicia Bolton was celebrated October 22. Mr. and Mrs. Jorgensen spent their honeymoon in Mexico and Southern California. They will be at home to their friends on Lake street after December 1.

Chapter Elects Officers

San Francisco Chapter, A. I. A., has elected the following officers for 1925-6: President, John Reid, Jr.; Vice-president, Harris Allen; Secretary and Treasurer, Albert J. Evers; Directors for three years, W. C. Hays and J. S. Fairweather.

Personal

Architect Philip Dean announces the removal of his office from 368 North Bronson street to 701 Builders' Exchange building, Los Angeles. Catalogs and samples of building material will be welcome.

Mr. J. O. Elmer of San Francisco, for many years identified with the lumber commission business, has been appointed sales manager of the Strable Hardwood Company, Oakland.

By an error it was stated in the October Architect and Engineer that Architect Chas. Peter Weeks is recuperatating in Arizona. Mr. Weeks is at El Paso, Texas, and reports from there are that he is doing splendidly.

Architects Baumann and Jose have dissolved partnership, Mr. Baumann continuing the practice of architecture at 251 Kearny street, San Francisco.

Architect W. Douglas Lee has moved his office from the Sun building to suite 709 Textile Center building, Eighth street and Maple avenue, Los Angeles.

Mr. R. F. Felchin, engineer and contractor of Fresno, has been elected president of the San Joaquin Aeronautical Association, which is seeking the establishment of a municipal aviation field in Fresno.

Architect Rudolph Meier has moved his office from 506 to 402 Title Insurance building, Los Angeles.

Architect Samuel B. Birds announces the removal of his office from 300 South Vermont Avenue to 1223 McCadden Place, Los Angeles.

Messrs. Dedrick & Bobbe, architects and engineers, announce the removal of their offices from 214 Laughlin Theater building to 901 Heartwell building, Long Beach.

Architect George E. McCrea has temporarily closed his San Francisco office to study Spanish architecture in Mexico.

Architect Washington J. Miller announces the removal of his office from the Lachman building, San Francisco, to 337 Seventeenth street, Oakland. Mr. Miller is taking an active part in the Oakland school building program, having completed plans for one large building and is at work on plans for a second structure. Catalogues and trade literature are invited.

The Oakland Building and Grounds Department, city schools, has moved from Sixteenth street and San Pablo avenue to 337 Seventeenth street. Architect Howard Schroeder, formerly chief draftsman for the department, has opened an office in the Builders' Exchange building.

OBITUARY

August G. Headman

The death of Architect August G. Headman occurred at his San Francisco home, 2527 Lyon street, on October 28, following an illness which extended over a period of more than a year. Mr. Headman had been practicing architecture in San Francisco for the past twenty-five years. He was at one time associated with Architect P. Righetti under the firm name of Righetti & Headman. Later he opened an office independently in the Call building, and this office was maintained up to the time of his death. He had been able to attend to his business off and on during his sickness up to within a short time prior to his death. He was one of the organizers of the San Francisco Architectural Club and was at one time an officer in the San Francisco Chapter, A. I. A. He was a member of Oriental Lodge, No. 144, F. & A. M. Mr. Headman was a native of Roseburg, Oregon, and was forty-two years of age. He is survived by a widow, Irene Flint Headman, foster-son, Jack Flint Headman, and three brothers. Among the notable buildings designed by Mr. Headman are the Native Sons' building on Mason street, between Geary and Post streets, and a number of large apartment houses and hotels.

W. J. Cuthbertson

Mr. W. J. Cuthbertson, for nearly 50 years a practicing architect in San Francisco, died recently at the age of seventy-five, following an illness of two weeks. Mr. Cuthbertson was City Architect during the latter part of the Phelan and the first part of the Schmitz administrations and was active in plans for the reconstruction of San Francisco following the fire of 1906. He is believed to have been the first of San Francisco architects to advocate "two-story" streets as a solution of the traffic problems of the future. He was born in London and came to San Francisco when a child. Most of the structures designed by Mr. Cuthbertson were apartments and flat buildings.

E. L. Van Cleeck

Mr. E. L. Van Cleeck, for many years an architect in Santa Cruz, dropped dead in the First National Bank at Santa Cruz, October 26th. Mr. Van Cleeck designed many of the new buildings and residences in the Surf City. He was a Mason and Elk and for many years was a vestryman of Calvary Episcopal Church.

COMPETITIONS

AUSTRALIAN WAR MEMORIAL

The Commonwealth of Australia is inviting competitive designs for the Australian War Memorial at Canberra. "The Memorial is intended to take the form of a monumental building comprising a 'Hall of Memory' to those Australians who died as a result of service in the Great War, and courts and galleries suitable for housing the war relics forming the Australian War Memorial collection, part of which is now displayed at the Exhibition building, Prince Alfred Park, Sydney." The competition is limited to architects who are British subjects resident or domiciled in Australia, or born in Australia and living abroad. The competition closes at 12 noon on Wednesday, March 31, 1926. Conditions regulating the submission of designs may be obtained upon application from the Secretary, Federal Capital Commission, Canberra, and from the official secretary to the Commonwealth of Australia in the United States of America, 44 Whitehall street, New York.

FOR COVER DESIGNS

The House Beautiful Cover Competition has been an annual event now for the past three years. The announcement of the fourth competition contains an addition to the usual quota of prizes. The first prize is $500, the second prize $250. In addition to these, this year, and in addition also to the possible purchase price of a design, is offered a special prize of $100 with a certificate of merit, for the best design submitted by a student of any school of art. The competition closes January 29, 1926. Full particulars regarding it may be obtained from the Competition Committee, House Beautiful, 8 Arlington street, Boston, Mass.

JACOBSON ANNUAL COMPETITON

Jacobson & Company of New York are offering prizes amounting to $1,000 for a "Design for an Architectural Club." The competition is open to architects, draftsmen, students and others. Prizes to be awarded as follows:

First Prize	$500
Second Prize	300
Third Prize	200

The competition closes April 1, 1926. A full announcement appears elsewhere in this issue, or information may be obtained from Jacobson & Company, 241 East 44th street, New York.

WALLPAPER DESIGN

A competition open to all architects, artists, decorators, designers and students resident in the United States is being conducted by The Arts-in-Trades

Club of New York. Designs are requested for a wallpaper to be used in the living room of a moderately-sized, detached, suburban dwelling with a medium natural light exposure.

First Prize	$1,000
First Honorable Mention	200
Second Honorable Mention	100

Designs to be submitted in the competition should be sent to Mr. George E. Clark, Secretary of the Exhibition Committee, Arts-in-Trade Club, 34 East 38th street, New York, between February 15 and February 20, 1926.

South San Francisco Underpass

great Bay Shore Highway. This is the verdict of those who have seen the plans prepared by the bridge department of the California Highway Commission for the great underpass at South San Francisco under the tracks of the Southern Pacific Company.

The South San Francisco grade sep-
A fitting portal to San Francisco's aration is by far the largest and most ornate yet planned for the California State highway system. It will have a clear roadway width of forty feet, and at one side a separate subway, ten feet above the grade of the road, will accommodate an eight-foot sidewalk. Preliminary estimates of the cost place it at $260,000. As soon as an order is issued by the Railroad Commission authorizing the grade separation and assessing the cost between the state and the railroad, final plans and specifications will be prepared and the project advertised for bids.

The deck of this great subway will provide space for sixteen lines of railroad, although only eight tracks are in use at this point at the present time. Future expansion of the railroad facilities is thus provided for.

The underpass is located a few hundred yards south of the South San Francisco station of the Southern Pacific. Its grade at the lowest point is ten feet below sea level at high tide, which requires that it be thoroughly waterproof. In this respect it is similar to the subway recently completed on the Embarcadero in front of the ferry building, which is 8.8 feet below mean high water. The Bay Shore subway, however, will have over twice the width of that on the Embarcadero.

To keep the water from coming up through the bottom of the subway will require under the roadway at its deepest point a solid concrete slab four feet in thickness. This slab will extend the full length of the subway, but will decrease in thickness as the grade of the highway rises. This huge slab of concrete will be securely fastened to the heavy retaining walls of the underpass and the bottom and sides will be thoroughly reinforced with steel. The construction is such that the subway has been likened to a huge concrete boat 1,200 feet long.

Art in Outdoor Lighting

In attempting to make Coral Gables, a new suburb of Miami, Florida, something more than an average realty development, the decorative possibilities of light have been utilized in an unusual manner. Engineers and artists of the Westinghouse Electric & Manufacturing Company were called in by those who conceived the plan, and the result is one of unusual beauty.

Venetian Pool is one of the principal civic rendezvous, and consists of an irregularly shaped artificial basin, ornamented by numerous Spanish bridges connecting islets, with shaded paths skirting their shores. Surrounding buildings are of Spanish or Moorish architecture. Native coral-like stone, curbing the lagoon, is used also for ornamental pillars on which lighting units are mounted. Walks and bridges of the lagoon are lighted by lanterns supported on gaily colored posts projecting from the water in Venetian fashion.

Regulation street lighting standards are used in residential sections of the city, equipped with Sol-Lux units and refractors.

Photos, in sepia tints, with a description of the Coral Gables installation, have been collected into a booklet under the title "Art in Outdoor Lighting," a copy of which may be had from the Westinghouse Electric & Manufacturing Company, East Pittsburgh, or San Francisco.

Buzzell Electric Company Moves

The Buzzell Electric Works announces the removal of its office and shop to 130-132 Eighth street, corner Minna street, San Francisco, where the company has had built a modern structure equipped with the latest labor-saving machinery in the electrical industry. For more than eighteen years the Buzzell Electric Works were located at 532 Sansome street, and this location will be continued as a branch office for the convenience of customers in that part of the city.

A Sonnet on Architectural Practice

Alphabetically Arranged by V. O. Wallingford in Pencil Points

A, for an Architect, whose name was B,
And C for a client who came in to see
About D, a design for E-recting a F-lat,
G-rand, H-andsome and I-mposing, and all of that;
J, for Jacobean, the style of the gables
K-aleidoscopically colored to harmony-tables;
Bearing L, the looks, always in M, the mind,
For the good of the N-eighborhood, and things of that kind;
O for orientation, and P for some paint,
Q-uaintly R-eacting on S-inner and saint,
According to T, the technical statistics,
U, for uniform with V-ariable characteristics;
Having W, the windows, set at X, the unknown,
By co-efficient Y, for the new building Z-one.

PICTURE SHOWS ELECTRICALLY EQUIPPED APARTMENTS

Electrified Apartment Model Shown in San Francisco

By M. W. SCANLON

A DEMONSTRATION of the application of electricity to the operation of a modern public building is being given in California cities this month in the showing of the Westinghouse electrified apartment building model. More than one hundred pieces of electrical equipment are installed in this miniature building, each piece being a very accurate replica of the real apparatus. Applications are shown which are typical to office buildings, hotels, restaurants, clubs, apartments, public buildings and homes.

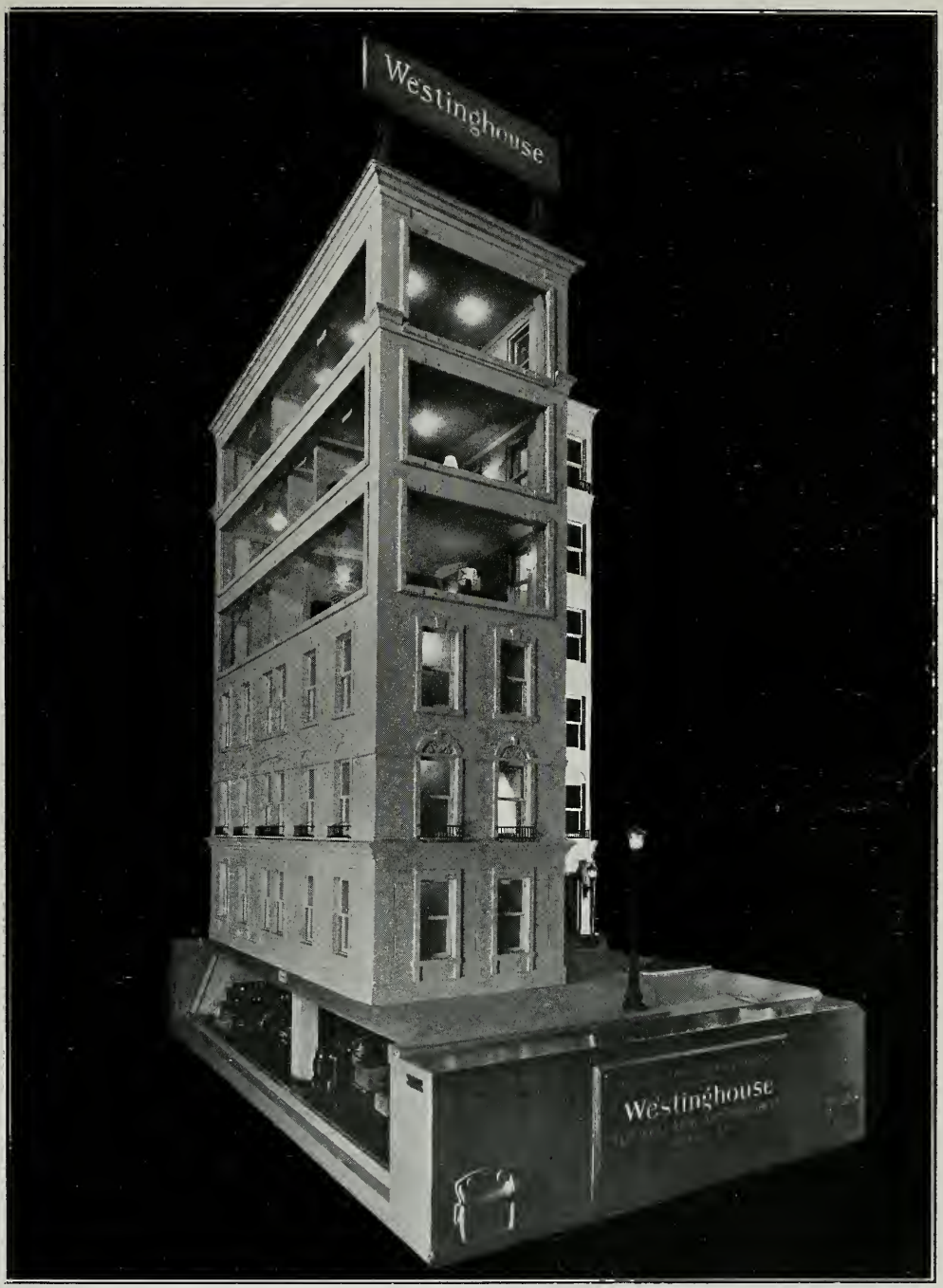
Though the manufacturers call attention to the completeness of their line, the real purpose in constructing the building was not to show apparatus, but to show how completely electricity can be used in the operation of buildings. Heretofore, exhibits of electrical applications have been limited usually to the kitchen installation, the elevator installation, the lighting or some other special part of the complete building installation. In this building electricity is shown in application from cellar to garret, and from sub-station to radio.

No matter in what line of engineering, design or construction a man may be engaged, he will find something of interest in the electrified apartment home on the fourth floor. Here is represented the living room, bed room, bath and kitchen of an apartment home. In the living room along with the miniature furnishings are an electric heater in the fireplace and a radio set. The lighting in this room is all from wall brackets and portable lamps complete even to the parchment shades.

The bed room contains a model radiant style electric heater, while a white enamel wall-mounted electric heater is shown in the bathroom. Appropriate furniture has been placed in these rooms also, all built to scale.

The kitchen of this apartment home is especially interesting, for it demonstrates the advantages to the builder to be gained by the electrification of the kitchens in an apartment. No chimney or flue is required. Efficient and attractive kitchen design has been made easier because the range is flueless, the refrigerator is iceless and the lighting flameless. Younger women form a large percentage of the apartment housekeepers today, the younger women are ever seeking such conveniences as automatic electrical kitchen equipment gives. Such equipment, therefore, makes present day apartments more marketable and guarantees maintained property values over a longer period.

In addition to the home kitchen, there is shown a restaurant kitchen and a restaurant pantry. The restaurant kitchen



UNIQUE MODEL OF ELECTRIFIED APARTMENT BUILDING

illustrates applications of electricity to the heavy duty range, the heavy duty broiler, the large bake oven and the commercial type waffle iron. The pantry contains a hot table, percolator set and electric dishwasher. The kitchen is specially ventilated with a wall-mounted ventura fan. Ceiling lighting throughout the building is provided by minia-

(Concluded on page 121)

NEW HALL OF JUSTICE, LOS ANGELES
Exterior of Raymond Granite

How a Million Dollar Granite Contract Was Successfully Completed

THE production of granite has become one of the great industries of the West, and the Raymond Granite Company, one of the largest producers of this material in the world, has for years been a leader in the industry. Many of the magnificent structures in California—the civic and office buildings of San Francisco and Los Angeles, particularly — are clothed in granite produced at Knowles, California.

Raymond granite was specified for the new Hall of Justice in Los Angeles, and this contract alone amounted to more than $1,030,000, one of the largest orders for this material ever awarded in the West.

The Raymond Granite Company has been operating since 1878. In 1898 the company purchased the present quarry

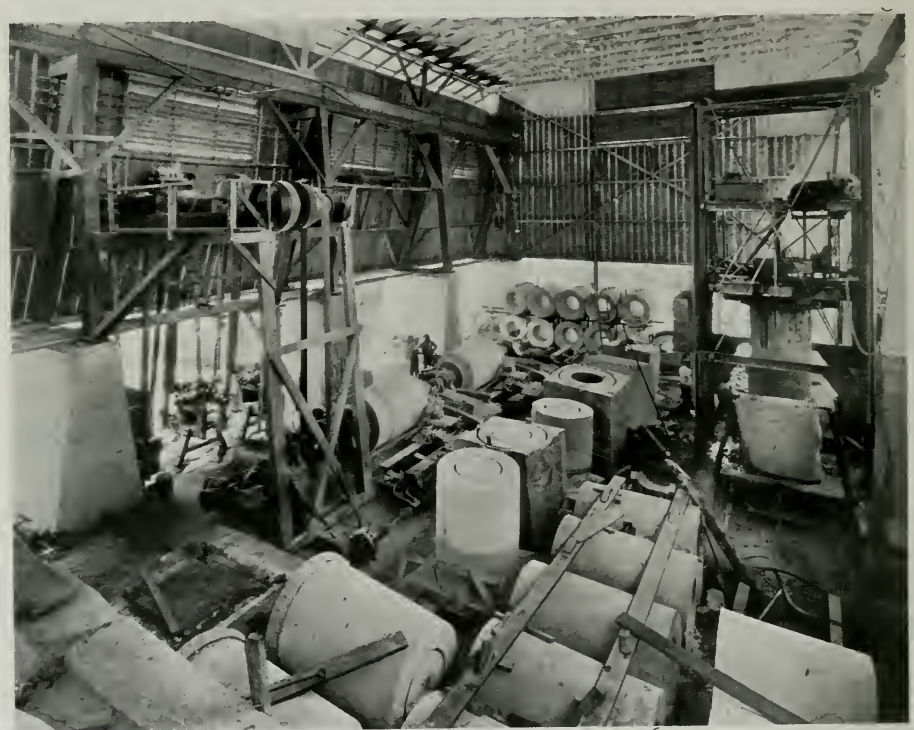
ONE OF MANY GRANITE BLOCKS AT KNOWLES, CALIFORNIA

GRANITE PILLARS READY FOR SHIPMENT TO LOS ANGELES TO BE PLACED ON THE NEW HALL OF JUSTICE

at Knowles, Madera County, and since has enjoyed continuous growth. The entire quarry holdings comprise 1,720 acres, with 80 acres composed of a practically inexhaustible supply of beautiful white granite, much in demand for permanent buildings and memorials. To operate the company's quarry and general offices requires a personnel of 350.

The method of transforming a crude block of granite to the beautiful state that one sees it on skyscrapers and monumental buildings is extremely interesting. The most ingenious and latest machinery is necessary in the process, saw cut into them at a speed of one foot an hour. The columns are six feet, two inches in height and four feet, two inches in diameter. Before cutting their weight was twelve and a half tons, and after cutting they weighed four and three-quarter tons. Each section of the columns are cut with a large Patch granite lathe so that the columns can slip securely into the iron or concrete holding.

So efficient is this modern machinery that each column requires only 1½ hours hand work. Traveling cranes of 30 and fifty tons capacity carry the columns to



BORING AND CORING MILL. COLUMNS ARE CUT IN THIS ROOM BY HUGE MACHINES WHICH CUT AT THE AVERAGE SPEED OF ONE FOOT AN HOUR

and in no other industry, perhaps, is the exemplification of the mechanical age shown in a greater measure than in the production of granite.

When a granite block is taken from the earth, it is placed before a huge cutting machine, which cuts eight feet an hour. The blocks are often as high as five feet, and the machine regularly cuts 160 square feet an hour.

To obtain the columns for the new Hall of Justice in Los Angeles, the blocks were taken to the boring and coring mill, where a Parker rotary stone another section of the cutting room, where they are prepared for shipment.

The American plan is followed in the Raymond granite quarries and has proved eminently successful. When the company obtained the Los Angeles Hall of Justice contract it was necessary to install costly machinery in order to carry out the contract properly. The new machinery cost $100,000, and some of it, built according to the company's own particular design, served to revolutionize the methods of handling certain kinds of work. Moreover, the company

made a careful study of the various types of stone required on the job and established production quotas for these varieties of work.

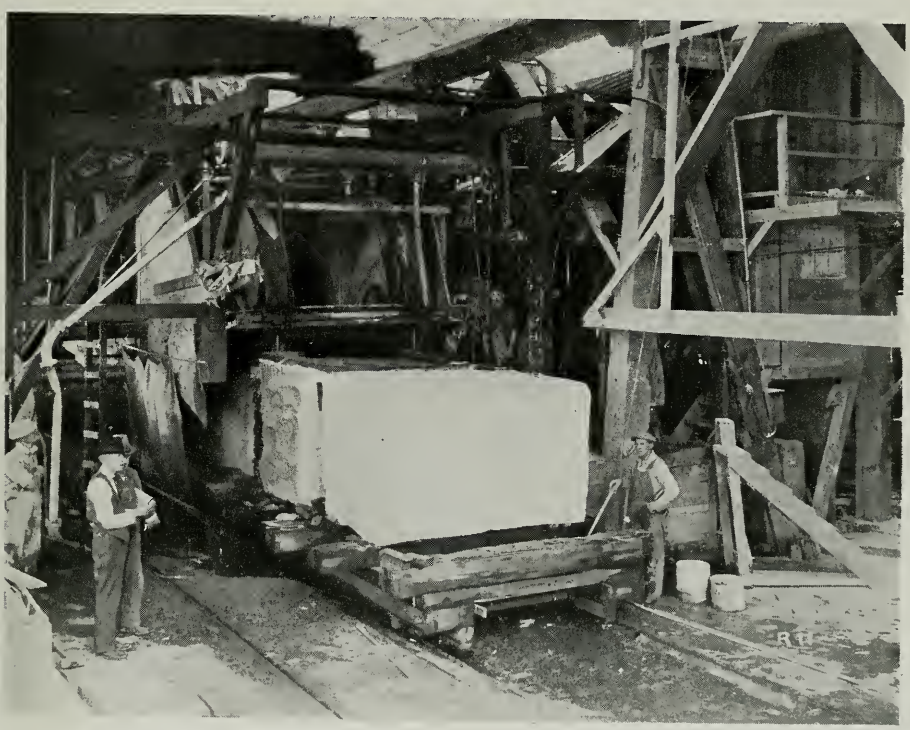
In the 37 years since the first stone was taken from the Knowles quarry, more than 10,000,000 cubic feet have been extracted, yet expert engineers estimate that 650,000,000 cubic feet of granite are still available.

Raymond granite compares most favorably with the best building granites in the United States as to beauty, whiteness, uniformity and freedom from flaws and chemical discolorations.

many patterns designed by the drafting department of the Bonded Floors Company. It is pointed out that many variations of these patterns may be designed to order.

In addition to the many pattern suggestions, a few of the most notable interiors in which Bonded floors have been used are also shown.

Architects who wish a complete set of these attractive pattern sheets may obtain the whole series by writing to the Bonded Floors Company, Philadelphia, Pennsylvania.



THIS GRANITE CUTTING MACHINE CUTS EIGHT FEET OR 160 SQUARE FEET AN HOUR. THE GRANITE BLOCKS SHOWN IN THE PICTURE ARE FIVE FEET HIGH

Trade Publications

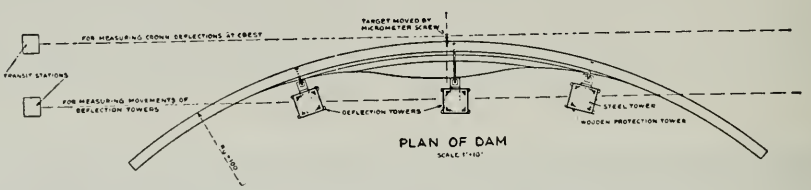
Floor Tile Pattern Sheets.—Of distinct interest to architects is the new series of pattern charts on Treadlite tile recently issued by the Bonded Floors Company. These sheets show eleven standard colors in which this resilient cork-composition tile may be obtained.

Since a Treadlite floor is laid tile-by-tile, the widest variety of design and color combination to harmonize with any room is easily attainable. The possibilities are illustrated by reproductions of

Ewing-Lewis Company Move

Ewing-Lewis Company, who have the Richards-Wilcox account for the San Francisco territory, have moved from the Underwood building to 404 United Bank & Trust building, 625 Market street, San Francisco. The Ewing-Lewis Company, of which Mr. H. E. Emerson is local manager, reports a steady increase in the demand for Richards-Wilcox hardware, some of the largest buildings erected in the Bay district in recent years having been equipped with this company's hardware. The change of location was made necessary because of insufficient office space due to increased business.

With the Engineers



PLAN OF TEST ARCH DAM BEING BUILT IN FRESNO COUNTY

Test Dam Expected to Solve Many Disputed Questions of Design

POURING of concrete for the proposed test dam on Stevenson creek, 60 miles east of Fresno, California, is scheduled to start December 1. Excavation is already under way.

The site for the test dam is a small gorge with strong granite walls in the wilderness, but close to a large tunnel conduit of the Southern California Edison Company's hydro-electric system. Here the dam may be safely tested to destruction if possible. It will have small reservoir capacity.

This dam will be of the single-arch type with vertical up-stream face and constant radius of 100 feet. It is proposed to excavate the bedrock for the foundation of the dam in such a manner that the profile along the up-stream face of the dam will be symmetrical and of a regular V-shape with a slight rounding at the bottom. The dam will first be built to a height of 60 feet and tested repeatedly under a variety of load temperature conditions for about one year. After information from the tests on this portion has been obtained, the dam will be raised in steps of 10 feet each to a height of about 100 feet.

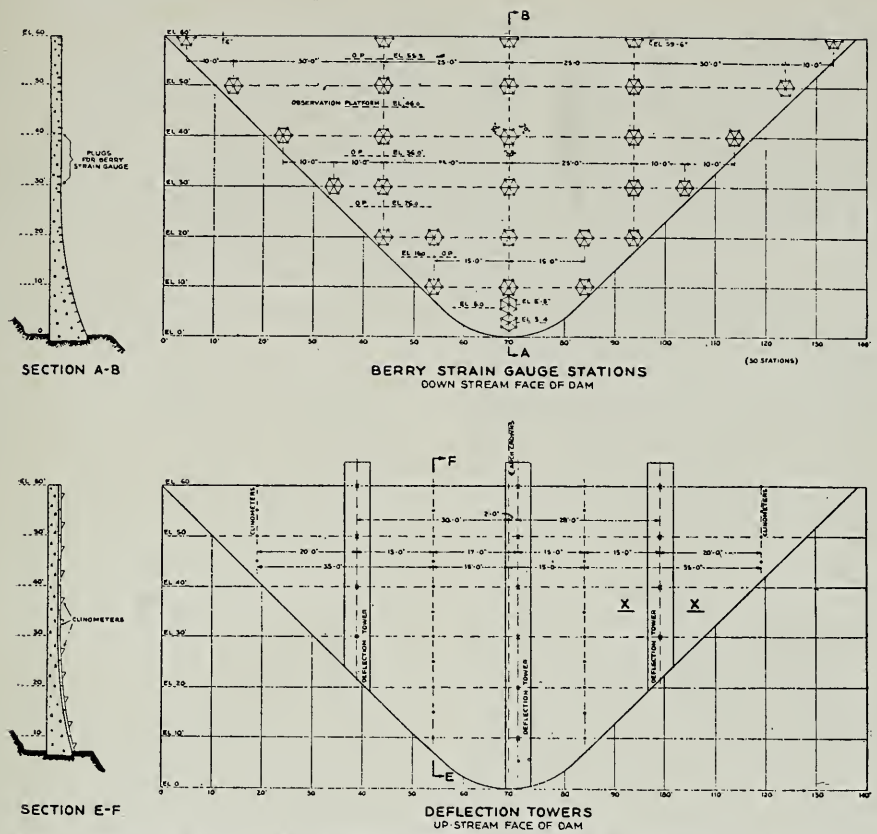
In raising the dam to 100 feet one abutment will be built on a tangent and will have a "gravity" cross section. It will thus be possible to investigate during the second phase of the experiments the reactions of the arch dam on a tangental abutment of gravity dimensions. Furthermore the gravity tangent will decrease the length of the arch and therefore diminish the probability of bucking.

The object of the experiments is to furnish information in the distribution of strains and stresses in an arch dam under various loads and temperature conditions. The test dam will be as large as some arch dams in actual use and built of the same kinds of materials.

During construction of the dam certain instruments and other accessories will be placed at predetermined points, and readings will be taken at frequent intervals for determining stress and temperature. A diversion tunnel will by-pass all flow in the creek. As soon as the dam is finished a complete set of measurements on all instruments will be made. Complete readings of all instruments will be made at specified intervals thereafter under varying conditions with water at different levels in the reservoir.

While the test dam is being built a large number of tests of concrete from the batches of concrete used in the dam will be made. Some of the laboratory tests will be made near the dam site. For the more refined tests specimens of concrete will be sent to the engineering laboratory of the University of California at Berkeley. Certain special investigations will also be made at the California Institute of Technology at Pasadena.

Henry Hawgood, consulting engineer of Los Angeles, is chairman of the subcommittee on the test dam. W. A. Brackenridge, senior vice-president of the Southern California Edison Company, is trustee for the special fund raised to construct the dam. H. W. Dennis, construction engineer of the same company, will have charge of the construction work. C. Derleth, Jr., dean of engineering, University of California, is chairman, and Fred A. Noetzli, consulting engineer, Los Angeles, secretary of the Engineering Foundation committee on arch dam investigation.



DRAWINGS SHOW PLANS FOR MAKING TESTS IN CONCRETE DAM TO BE BUILT IN FRESNO COUNTY FOR ENGINEERING FOUNDATION COMMITTEE ON ARCH DAM INVESTIGATION

Why Call It Advertising?

By O. P. SHELLEY
Vice-President and Manager, Pacific Materials Company

THE Western Business Papers' Association is to be congratulated and encouraged in the stand they have taken against the wasteful "Special edition" or "Special program" advertising. The objections are not to the usually worthy and legitimate associations or enterprises which issue these, but against this particularly wasteful mode of raising money.

By the time the cost of issuing the special edition or program is paid for, there is only a small amount left for the association, etc., by whom the "special" is issued. And the worst feature of this insidious and unsound mode of (so-called) advertising is that the bulk of the money usually goes to the professional solicitors who make a specialty of such editions.

No "one-time" advertisement can ever achieve real results, and not only does the "special" usually go to people who have no earthly interest in the things advertised, but the "Special edition" or program is for the most part looked at only perfunctorily, if at all.

You will find the same professional operators taking charge of one "Special edition" and program after another, always hounding for advertisements the same people who have formerly subscribed. They keep what they call the "sucker" list, bearing the names of those who have fallen for their schemes before. They use all sorts of inducements and promises which they know cannot be fulfilled, and if these fail they try to bulldoze and threaten.

It is too bad there is not a central bureau that could pass on such advertising schemes and reject the unworthy, but since there isn't, let's follow the lead of the Western Business Papers' Association and reject them ourselves.

A concerted movement by advertisers in general would soon make it so unprofitable for this class of advertising solicitation that it would die a natural death.

Field of the Contractor

A Plea for a Better and More Economical System of Estimating

By RAOUL C. GAUTIER, in Pencil Points

Not very long ago, the United States Chamber of Commerce formulated a code of business ethics, where the following may be found: "Waste in any form,—of capital, labor, services, materials or natural resources,—is intolerable, and constant effort will be made toward its elimination."

THE father of quantity surveying in this country, the late G. Alexander Wright of San Francisco, in expressing his hopes for a better system of estimating than that prevalent at the time (1914) said: "Happily, we are a progressive people and things are not done today as they were twenty or thirty years ago."

Yes, we are a progressive people, and yet what progress have we made in our methods since 1914? What has been or is being done to eliminate this intolerable waste of labor and services? Nothing, since architects and engineers are still making plans often incomplete, writing specifications often indefinite, and contractors are still estimating in the same manner, wasting every year hundreds of thousands of dollars in "taking off quantities"' in the same old way.

Few architects, engineers or owners realize the extraordinary amount of work and energy entailed by the making of an estimate, particularly in the short time usually granted to the contractor. Neither do they realize the stupendous amount of money thus spent.

It is our purpose to illustrate by means of concrete example the amount of work done and the amount of money spent on the making of an estimate.

Not very long ago, bids were wanted for an industrial building having a large area of working space, a large showroom and offices, and plans were sent to thirteen general contracting concerns. It was necessary for the general contractor to make or obtain a structural design for reinforced concrete work, to take off quantities for same as well as for the work he intended to handle himself, to obtain prices from material concerns, and, in addition, to obtain and analyze proposals from sub-contractors to make sure that they had taken off all that was required, all in ten days, the length of time allowed to prepare the bids.

The number of sub-bids received for each of the thirty-two (32) main subdivisions is shown below:

1.	Wrecking	3
2.	Excavating	6
3.	Shoring and Underpinning	3
4.	Reinforced Concrete (Design)	4
5.	Masonry	2
6.	Waterproofing	3
7.	Granite	4
8.	Limestone	8
9.	Structural Steel	2
10.	Steel Sash	4
11.	Hollow Metal Windows	4
12.	Store Fronts	3
13.	Glass and Glazing	6
14.	Marble and Slate	4
15.	Terrazzo	7
16.	Miscellaneous Iron	5
17.	Wire Partitions	7
18.	Steel and Glass Partitions	3
19.	Mill Work	2
20.	Lathing and Plastering	4
21.	Kalamein and Tin-clad Doors	6
22.	Hollow Metal Doors	4
23.	Elevator Doors	3
24.	Roofing and Sheet Metal	5
25.	Painting	8
26.	Ventilators	2
27.	Heating	6
28.	Plumbing	4
29.	Sprinklers	5
30.	Electric Wiring	4
31.	Elevators	6
32.	Dumbwaiters	7

Altogether 144 sub-bids, or an average of 4.5 per trade.

The building in question was estimated by local contractors only, and, naturally, several general contractors received bids from the same sub-contractors.

If we assume, for the sake of argument, that each of the sub-contractors figuring on the job sent his proposal to one-half of the general contractors, we find that approximately 300 sub-contractors had to take off and list quantities. This operation, including the overhead thereby incurred, costs as much as $200.00 for some of the trades and as little as $10.00 for others. We shall assume the average to be $25.00, and the general contractor's average cost for taking off his own quantities and analyzing the sub-contractor's bids shall be assumed at $200.00.

Under these assumptions, the total cost, not of estimating, but merely of taking off quantities and listing them,

runs as follows:

Sub-contractors	300 @ $ 25.—	$7,500
General Contractors	13 @ 200.—	2,600
TOTAL		$10,100

For a job costing in round figures $400,000.00, this totals approximately 2.5 per cent of the cost of the building. Whether he knows it or not, and it is assumed that he does not, the owner pays the bill, a bill which is far too large, since he pays for the same operation a number of times, instead of paying for it once. It is waste, pure and simple—intolerable waste.

And yet we have at our disposal a method: the quantity survey system—which, it is true, does not eliminate all the evils of estimating, but which has, at any rate, the following advantages:

(a) Since it is impossible for the quantity surveyor to make a complete survey of the quantities without having complete plans and specifications, the architect or engineer is compelled to make his plans complete and his specifications definite.

(b) The contractor is not then placed in the embarrassing position of deciding whether the architect means one thing or its equal, or another, or to assume full responsibility for conditions which the architect is either too lax or too lazy to investigate thoroughly, such as the nature of the ground, the probability of water in the excavation, the possibility of having to underpin adjacent buildings and a thousand other items which are responsible for a higher price when bids are asked from competent contractors on incomplete or indefinite plans and specifications.

(c) Incompetent and unreliable contractors who do not know how to take off quantities and who leave out of their estimates all that is not absolutely definite, hoping to get by later, and gamblers, are eliminated from the field, thereby making contracting a more reliable business.

(d) The architect's task is thereby rendered much easier and "extras" due to omissions or errors reduced to a minimum.

(e) The contractor's mind being absolutely at rest as to "quantities," he can devote all the time granted him for the preparation of the bid to the study of the best and most economical way of handling the job, the obtaining of better prices and finally his own pricing, which too often is done in the last-minute rush.

(f) This system works successfully in other countries and is used in this country for public and railroad work, and there is no reason why it should not be successful in all branches of construction. We believe that trained men could take off and list the quantities on a job such as mentioned above for one-half per cent or less with a corresponding saving of at least $8,000 on such a job as that under consideration. It is an easy thing to figure a proportional saving on $5,000,000,000; an approximate estimate of the amount spent annually for construction in the entire country. The result, $100,000,000, is staggering.

It is not proposed that the cost of quantity surveying be borne by the architect. God knows, his fee is small enough as it is. No, it is part of the cost of the building, just as much as the plans, or the heating for that matter, and it should be borne rightly by the owner. How to make him pay is a question to be decided by the parties interested, and an architects' campaign in this direction would undoubtedly help greatly.

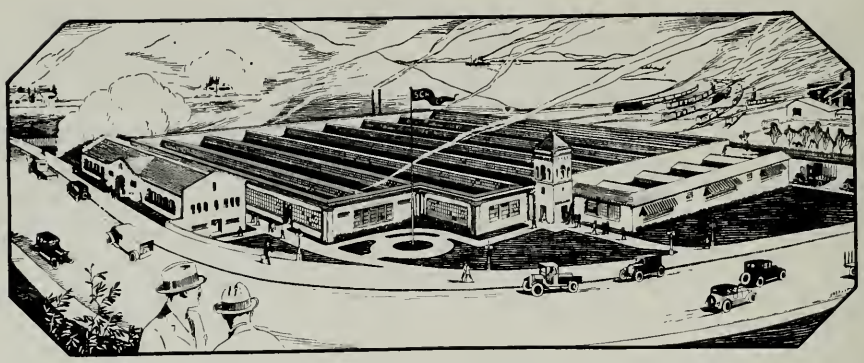
At any rate, it seems to the writer that there is no reason why quantities could not be taken off by somebody appointed by the architect and the surveyor's fee reimbursed to the latter by the successful contractor. It is suggested that a clause reading as follows might be incorporated in the specifications:

"The bidders shall allow in their estimate the sum of $.....to cover the cost of quantity surveying. This sum shall be reimbursed by the successful contractor to the architect immediately upon the awarding of the contract."

There is not very much more to be said except, perhaps, that besides the advantages enumerated above, the adoption of quantity surveying would probably eliminate from the field incompetent members of the architectural profession who, because they prepare incomplete plans and specifications, are able to take commissions for much smaller fees than the more competent and more conscientious architects.

Carbon Circuit Breakers

A new publication, describing the type CL carbon circuit breakers, has just been issued by the Westinghouse Electric and Manufacturing Company that is of particular interest to builders and architects. This type of breaker, designed especially for 250-volt industrial application, is described in full in this circular 1705-A. The circular is well-illustrated and outlines the important characteristics of the breaker, including effective shock absorbtion, adjustment and equalization of brush pressure and use of overload attachments. This publication may be obtained from any of the district offices of the Westinghouse Company or from the publicity department at East Pittsburgh, Pa. It is also filed with the American Institute of Architects, classification 31 C 42.



SCHLAGE FACTORY AS IT WILL APPEAR WHEN COMPLETED
Henry C. Smith, Architect

Schlage Button Lock Company Builds Great Factory to Meet Demands of Building Industry

SAN FRANCISCO as a city of industry and commerce is constantly thanking her climate and ideal location for the one hundred per cent efficiency in its progress toward growth and beauty.

"San Francisco," says its Chamber of Commerce, "is built upon rock. It's development is normal. It will live."

And in that credit is given to nature and the wisdom of human beings who recognize the advantages enough to settle their homes and businesses here.

"But what of the buildings upon the rock?" asks the analytical mind. "Will they live?"

Current enough to answer this question by way of example is the new Schlage Button Lock factory on the Bay Shore highway just south of the city at the foot of the hills.

The arrangement and lay-out of the buildings that will have a ground space of three acres are made by Architect Henry C. Smith, while the actual plans for construction are in the hands of The Austin Company of California, both working with an eye to everything that will support the city's code of definite progress.

The portion now completed covers an area of 102 feet, 6 inches by 210 feet, and makes up part of the factory. This is done in the very latest Austin construction, being of brick, cement and steel, with large windows on all sides and saw tooth lighting from the roof. The machinery is so arranged that raw material passes in one section and out the other, completed and ready for shipment.

The factory lay-out is large enough to include one other factory, the size of the one completed, a third factory unit a little smaller with plenty additional room for a three-story office building 50 feet by 100 feet and a warehouse 30 feet by 260 feet.

The office building will be built of fire-resisting material. The ground floor will be for storage; the next floor above given to experimental purposes, drafting, etc. The main floor (the street level floor) will include the offices of the executives of the company, president and general manager, Mr. Joseph B. Ruegg, and his assistant, Mr. Farnsworth Currier, secretary, chief engineer, sales manager, credit department, purchasing department, foreign department, accounting department and sales department. This building will have a tiled roof and the exterior walls will be finished in cement plaster.

The Southern Pacific Company has built a spur track to the new factory, the loading to be managed by building the warehouse over the end of this spur with cranes shifting the export direct from the building to the freight cars. The grounds surrounding will be landscaped and terraced.

In the factory now completed, capacity operation is under way with the output amounting to 2,500 locks daily. The increase in demand for the button locks is straining the present equipment to such an extent that $75,000 worth of new machinery has been added, together with the installation of a heating plant.

The Schlage button lock was invented by Mr. W. R. Schlage of 387 London street, San Francisco. It does away with the use of an indoor key, the pressure of a button in the center of the knob locking the latch, while the turning of the knob unlocks it.

The Schlage Company is a firmly established western enterprise, part of the big scheme of things manufacturing an article that is taking a direct part in the building that shall continue with it.

Copper Shingles the Latest

Commercial production of a copper-covered, non-metallic substance, long the dream of electro-metallurgists, has been accomplished and put to a large industrial use, according to an announcement by the Anaconda Copper Mining Company.

The success of the new process unites the interests of two large industries, copper and asphalt, in the production of roofing materials.

The achievement gives the country a new product—copper-clad asphalt shingles. The roofing is asphalt covered and impregnated with copper. The process of manufacture is termed "galvanoplastry."

Many years ago it was discovered that copper could be deposited electrolytically, having fine texture and high tensile strength. Innumerable attempts have been made to transfer this discovery from laboratory to factory. Up to the present, however, they have been unsuccessful when applied on non-metallic bases.

Unique Heating Units

A heating system which is unique in the history of gas heating has just been installed in the office building of A. S. Therberge, a twelve-story structure at 1013-1015 South Los Angeles street, Los Angeles, by the Pacific Gas Radiator Company. Instead of a central plant, a pressed metal gas radiator has been installed in each of the 78 rooms and a special suction exhaust fan on the roof assures perfect ventilation and removal of gases from the vent line. The installation is said to be the only one of its kind in Southern California.

"More and more office buildings are turning to the individualized type of gas heating," says Mr. C. O. Menig, sales manager of the Pacific Gas Radiator Company. "This system has been found to be almost ideal for Southern California. Owners of buildings are finding that they can save a great deal of money by using individual heating appliances in each room instead of a central plant. The Pacific gas steam radiator is proving to be very popular for this purpose."

Will Meet in Portland

The seventh annual meeting of the Associated General Contractors of America will be held at Portland, Oregon, during the week of January 18. The convention city was selected by the Executive Board of the Association at the concluding session of its recent meeting at Dallas.

Electrified Apartment

By M. W. Scanlon

concluded from page 111

ture duplicates of the Sol-Lux unit, which in cross-sectional shape follows the curve of equal light distribution, giving a scientific design which also harmonizes well in all the places in which it is shown for use.

The model, built on the scale of one inch to the foot, represents a modern six-story apartment building in which both large and small apartments are provided with all the comforts and conveniences of electricity. The drawings and plans were made by a New York architect, in order to assure accuracy and faithfulness in the construction and design of the miniature building, and also that the architecture and building practice would be thoroughly modern. The elevator equipment and layout, with one elevator running, was planned by an elevator builder. The lighting was laid out by the Illumination Engineering Bureau. The layout of the machinery in the basement was planned by the general engineering department of the Westinghouse Electric and Manufacturing Company.

The machinery in the basement includes a complete set-up applicable to any large building. At one end of the basement is the sub-station, with transformers for the reception of incoming power. Then the panel switchboard with sixty-six separate pieces of equipment mounted on it, is a marvel of miniature detail. There are also present the whole series of motors for pumps, refrigeration, ventilation and elevator operation. Additional elevator equipment is shown in the pent-house on the roof.

The building houses, all told, 112 models of Westinghouse electrical products, of which about 50 are separate items and the others are duplicates of these.

Architectural Club Dinner

The members and friends of the San Francisco Architectural Club will spend Saturday afternoon, December 12, at the plant of the Travertite Marble Works, P. Grassi & Company, 1945 San Bruno avenue, San Francisco. A real Italian dinner will be served, following which the members will be taken through the plant by guides, who will explain the various processes of manufacturing and finishing Travertite marble and Travertite stone. The plant will be in full operation, giving the architects and draftsmen an opportunity to see the steps and processes necessary to carry out their designs in these materials.

New Wall Product

Production has recently begun on Bishopric Insulating and Deadening Base at the local plant of the Bishopric Manufacturing Company of California.

While this product has been made for eighteen years by the eastern factory, it is just being introduced into this territory because of the success which attended the introduction of Bishopric Base, which has been sold and made in Los Angeles for some years.

"Eastern users have made a number of tests which prove that Bishopric Insulating Base has advantages over any other material of this purpose," says Mr. J. W. Ford, Jr., president of the Los Angeles plant.

"However, we have taken the product as made in the local factory and submitted it to the Raymond G. Osborne Testing Laboratories in Los Angeles. They made a unique test. A clock was placed in a sound-proof box. Over one end of the box all the insulating materials on the Los Angeles market were placed one by one and then tests were made to see how far away the tick of a clock could be heard. Bishopric Insulating Base proved to have greater sound deadening qualities than any other material on the market. In comparison with the most widely used sound deadening materials, Bishopric Insulating Base showed a 60 per cent greater efficiency in deadening sound.

"This is all the more unusual when it is considered that Bishopric Insulating Base has many more advantages besides its sound deadening qualities. It is manufactured much like the standard Bishopric Base with dovetailed white pine heavy insulating felt. In the standard base, fibre board is used instead of felt. The new base can be nailed directly to the studding and plaster is applied over it. The plaster wedges between the beveled lath and forms a dovetail—the strongest mechanical key known. In addition to being practically sound proof, walls locked in Bishopric Base are certain to be freer from cracks and there is no danger of sagging or buckling as when plaster is applied over weaker materials.

Senior Architectural Draftsman

Receipt of applications for senior architectural draftsman in the United States Civil Service Commission will close December 26. The date for assembling of competitors will be stated on the admission cards sent applicants after the close of receipt of applications. The examination is to fill a vacancy in the office of the Supervising Chief United States Engineer, New York, N. Y., and vacancies in positions requiring similar qualifications.

The duties of the position consist of designing, working up of complete drawings for repairs, alterations and extensions to buildings of first-class construction from field sketches and measurements; making general or detail drawings of moderate complexity or difficulty in accordance with drawings showing lay-out or general design of buildings; checking drawings or tracings, making routine or technical computations or calculations of moderate difficulty, and preparing routine specifications and making routine estimates; preparing bills of material, inspecting building work under contract; and other related work as required.

Competitors will be rated on a preliminary sketch, final drawings and education, training and experience.

Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or the secretary of the Board of United States Civil Service Examiners at the post office or custom house in any city.

New Trend in Home Design

A new type of home is developing in Southern California which is distinctive because of its unusually attractive color scheme. This is the home built of face brick which, according to Mr. Robert Linton, general manager of Pacific Clay Products, is rapidly gaining favor with architects who are looking for something better and different.

"Homes built of common brick are now so plentiful in Southern California that there is no opportunity to develop a distinctive effect with this material," Mr. Linton explains. "However, with face brick the architect and designer have an almost new material to work with. Face brick has always been used for big buildings until some far-seeing architect saw the advantages of spending a few more dollars on a brick home to get a fine quality of brick with a more beautiful surface which would retain its color indefinitely.

"The advantages of face brick for home building are too many to name. The most obvious one is its color. There is an unlimited range of shades available and hundreds of combinations can be affected with the different bricks. The life of a face brick house is much longer than that of any other building material as anyone can readily see by examining the older office buildings in Los Angeles which were built of face brick.

"There is a general misunderstanding about the cost of face brick, which is not at all prohibitive. The cost runs only a few cents higher than that of common brick and the effect is well worth a greater expenditure.

Causes of Dry-Rot in Buildings

CALIFORNIA home owners should get acquainted with the work of fungi, those plant organisms which cause the decay of wood, according to Emanuel Fritz, Professor of Lumbering in the Division of Forestry of the University of California. Professor Fritz says that because of improper design or improper care of a home or other wooden structures, these fungi are likely to cause the owner considerable loss.

"We receive many requests," says Professor Fritz, "from the owners of homes, factories, and even 'movie' houses for advice in controlling the spread of the decay in their structures. In each case the remedy is simple though it may, in some cases, be costly. The fungus causing the decay or disease of the wood is a low order of plant life which absorbs or eats portions of the wood cells for its food. There are many fungi which prey upon wood but those giving the greatest trouble are the dry-rot fungi, so called because their work transforms the wood into a dry, brown mass which crumbles to a fine powder when crushed between the fingers.

"All fungi require a certain amount of moisture and warmth to live. If the supplies of these reach certain minima the fungus can not develop. Food, for example, when stored in an ice-box will not rot. Obviously, a house can not be kept so cool as to arrest the growth of fungi, but it can be kept dry. The simplest remedy therefore is to keep all wooden portions of the structure away from contact with the moist soil. The sills should be a foot or more above the ground surface and should be laid on concrete or stone. When a new building is completed, especially where there is no basement and the floor joists are close to the ground, the contractor or owner should make certain that no refuse, sticks, or boards project from the ground to a wooden member. Decay is transmitted through such refuse to a house. Furthermore, under-the-house spaces should be well ventilated to promote dryness. Leaky plumbing and rain conductors or the spraying from the garden hose are also prolific sources of moisture to give fungi their start.

"Dry wood will not rot and will last indefinitely. But once started, the decay may spread over a large area before being detected, in which case drastic means for eradicating it are fully justified. First of all, the decayed wood must be cut out and along with it much of the adjacent portions even though they appear to be sound wood. This latter is important as the roots of the fungus penetrate the wood far in advance of the more apparent rot. The portions removed should be burned. The design

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responsible for the entrance or holding of water should be corrected or the source of the offending moisture removed. The repairs should be made with sound wood, preferably of a durable species.

"Sometimes it is desirable to spray the ground and old wood surfaces with a preservative like zinc chloride or creosote, or to use new lumber that has been thoroughly impregnated with such preservatives. The old adage, 'An ounce of prevention is worth a pound of cure' is particularly true in the case of a house if it is to be kept free from decay. Keep the wood dry and it will not rot."

Architect, Client, Contractor

The Circular of Advice issued by the American Institute of Architects contains the following:

The architect's relation to his client is primarily that of professional adviser; this relation continues throughout the entire course of his service. When, however, a contract has been executed between his client and a contractor by the terms of which the architect becomes the official interpreter of its conditions and the judge of its performance, an additional relation is created under which it is incumbent upon the architect to side neither with client nor contractor, but to use his powers under the contract to enforce its faithful performance by both parties. The fact that the architect's payment comes from the client does not invalidate his obligation to act with impartiality to both parties.

Saving Through Insulation

The energy wasted by the loss of heat through ordinary furnace walls ranges from 3 to 15 per cent of the heat in the coal. The latter figure, however, is well beyond the limits of ordinary practice, applying only to small boilers operating at extremely low ratings. The other extreme of 3 per cent occurs only with the largest boilers operating at high ratage operating conditions, this loss is at least 4 per cent. About seven-tenths of ings. For the average boiler under aver- this amount can, on the average, be saved by proper insulation of the fur- over-all efficiency about 3 per cent, but nace walls. This increases the boiler the coal saving is greater than that. For example, suppose that the boiler efficiency is increased from 60 to 63 per cent by proper insulation of the furnace walls. Then 3-36, or nearly 5 per cent of the coal is saved. With small boilers operating at low ratings, the percentage of coal saved may be considerably more than this.—Power.

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912,

Of THE ARCHITECT AND ENGINEER, published monthly at San Francisco, California, for October 1st, 1925.

State of California,

City and County of San Francisco

Before me, a Notary Public in and for the State and county aforesaid, personally appeared W. J. L. Kierulff, who, having been duly sworn according to law, deposes and says that he is the business manager and publisher of THE ARCHITECT AND ENGINEER, Inc., and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

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5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is——. (This information is required from daily publications only.)

W. J. L. KIERULFF, President.

Sworn to and subscribed before me this 29th day of September, 1925.

MARY D. F. HUDSON

Notary Public in and for the City and County of San Francisco, State of California.

My Commission expires December 22nd, 1928.

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Contents

VOL. LXXXIII DECEMBER, 1925 Number 3

COVER PICTURE—SAN FRANCISCO TELEPHONE BUILDING AT NIGHT

TELEPHONE BUILDING, LOOKING SOUTH ON NEW MONTGOMERY STREET, SAN FRANCISCO - - - - - - - - - *Frontispiece*
Miller and Pflueger and A. A. Cantin,
Associated Architects

THE TELEPHONE BUILDING, SAN FRANCISCO - - - - - - 51
B. J. S. Cahill,
Architect

LARGEST CORPORATION OFFICE BUILDING ON THE PACIFIC COAST 80
E. V. Cobby,
Building Engineer

ELEVATOR EQUIPMENT OF NEW TELEPHONE BUILDING - - - 82
E. P. Ford

STUDIES OF CURING CONCRETE IN SEMI-ARID CLIMATE - - - 83

WHAT ABOUT LOCAL ARCHITECTS? - - - - - - - - - 85
L. C. Mullgardt, F.A.I.A.

PHILIPPINE MAHOGANY - - - - - - - - - - - - 88
C. H. White

THE EXPOSITION OF DECORATIVE ARTS IN PARIS, 1925 - - - 89
Reddich H. Bickel

AN ESSAY IN MODERN ARCHITECTURE - - - - - - - - 97
Irving F. Morrow

RELATIONS OF THE ARCHITECT AND CONTRACTOR - - - - - 110
J. W. Cowper

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A Merry Christmas

Counting no asset greater then friendship, we ask subscribers and advertisers to accept this expression of our cordial appreciation of the good will they have manifested toward us the past year.

It is our sincere wish that joy, contentment and prosperity attend them and theirs in the New Year.

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The Architect and Engineer

December 1925

TELEPHONE BUILDING, LOOKING SOUTH ON NEW MONTGOMERY STREET, SAN FRANCISCO
MILLER & PFLUEGER, A. A. CANTIN, ARCHITECTS

Frontispiece
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THE
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Vol. LXXXIII
No. 3

The Telephone Building, San Francisco

By B. J. S. CAHILL, Architect

A TWENTY-SIX story building, 150 by 160 feet, rising 436 feet from sidewalk to base of flagpole with nearly six acres of exterior wall surface and costing four millions of dollars is, in itself, an architectural event of the first magnitude.

Seen from the Bay, this new building completely dominates the skyline of San Francisco and, although somewhat to the south of the city's main mass, it holds its own in silhouette by sheer bulk, towering above all other buildings as well as the hills behind and the buildings on those hills also.

There are bigger and loftier buildings in the country but this one has other claims on our attention besides its colossal dimensions.

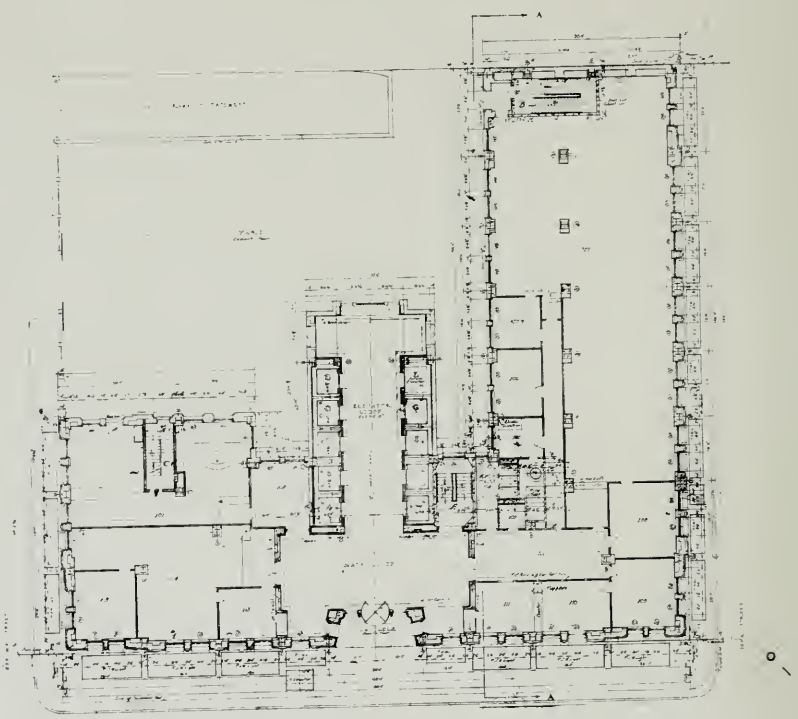
The design of this architectural Titan, so solid in fact, so ethereal in effect, is a complete departure from the precedents of old Europe. Throughout the entire structure there is scarcely a trace of school tradition. Early "studies" of the architect reveal hints of Gothic influence. But these practically faded out as the design neared maturity and, of all the definite historical styles extant, this building shows a frankly expressed trace of only one, and that, strange to say, is Chinese!

The conception of the whole building is daringly original. The minutest details are worked out with deliberate and consistent logic and the whole quaintly charged with symbolism which places it, as a work of creative art, immeasurably above the stodgy materialism of the conventional skyscrapers so happily defined by Montgomery Schuyler as "the common parallelopipeds of commerce."

Consciously or unconsciously the owner is largely responsible for the architectural quality and character of the building he puts up. It was a New York bank, for instance, that started the practice, followed by innumerable other banks, of insisting on a certain sumptuous extravagance in the banking room doubtless to show that the institution was so solid financially that it could easily afford to go to the very limit of outlay, much to the joy of architects and marble men. Moreover, to still further stress this theory it is considered the proper thing to

build the bank only one story in height although situated in the very heart of a city where real estate is most valuable.

The owners of the Telephone Company's building have pursued the opposite policy in every respect. On the outer edge of the expensive metropolitan area, on a comparatively inexpensive lot, they have piled up the maximum of working space in the tallest building possible of the utmost plainness and economy, consistent with durability and the dignity due to a great institution. The contrast extends even further. The typical bank is usually a prodigal concentration of costly materials, expressing ancient and over-worked architectural ideas, typical of the timid initiative of capital accumulated by caution. The Telephone build-

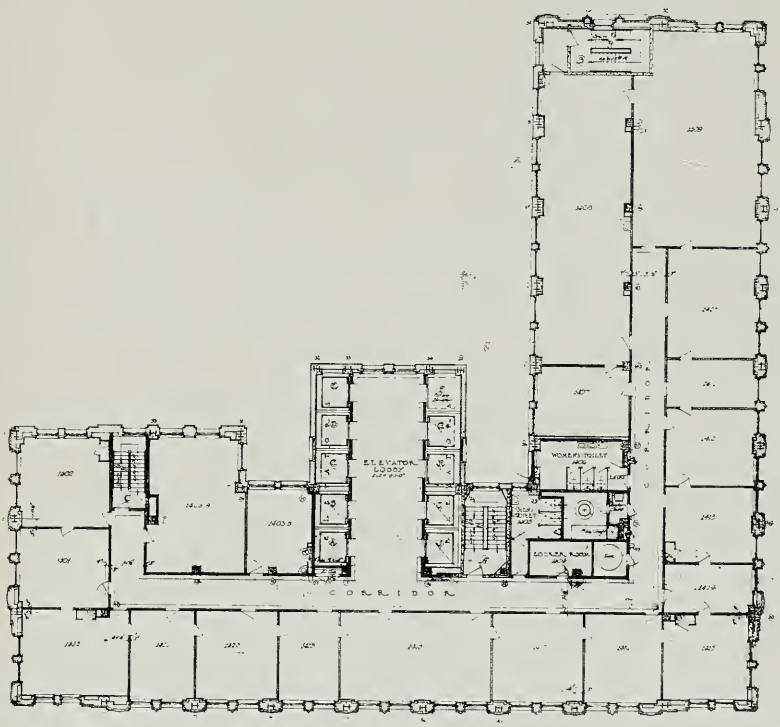


FIRST FLOOR PLAN, TELEPHONE BUILDING, SAN FRANCISCO
J. R. Miller and T. L. Pflueger, A. A. Cantin, Associated Architects

ing exhibits an economical, thinly-spread use of inexpensive material worked over, however, into daringly original architectural forms, characteristic of the bold initiative of capital created by invention. It is the genius of the inventor that has made the telephone what it is today. It is quite natural, therefore, that the representatives of the telephone enterprise should look for and encourage creative invention in their architect. And without confidence and patronage of the owner, the genius of the architect cannot possibly be revealed.

The plan, the principal part of any important building, has in the special case of the modern commercial skyscraper, passed already through three stages of development. First it did not differ from that

of the usual plan to suit any given lot, except that it was repeated vertically with added elevators and added altitude only, to distinguish it from a seven-story building on the same lot. That is to say, it carried up with it into the air the "finished front," the blank brick sides and the nondescript "rear," brutally regardless of the esthetic consequences. Secondly came the period when some concessions to appearances were made by various means and the plan was simplified and rectified to the parallelopipeds aforementioned. Quite often the upper stories were treated as street fronts on all four sides and a cornice carried around the top, with perhaps some attic feature of gable, dome or pyramid to crown the whole. But during this period of development,



PLAN, FOURTEENTH FLOOR, TELEPHONE BUILDING, SAN FRANCISCO
J. R. Miller and T. L. Pflueger, A. A. Cantin, Associated Architects

without full confidence in the resources of steel construction and somewhat in awe of the new principles involved, the architect subordinated his work for a while to the sudden importance of the structural engineer whose logical insistence on a severe rectangularity (involved in a uniformly loaded steel floor grid) completely dominated the interior plan as well as the exterior form. In the third or final stage we find that the architect, having familiarized himself with the principles of beam and column construction, comes once more into his own, with steel as his servant instead of his master.

This final metamorphosis came about through a world-wide recognition of the fact that the American skyscraper, far from being a

STEEL FRAME, TELEPHONE BUILDING, SHOWING NORTH FRONTAGE
T. RONNEBERG AND R. J. FISHER, STRUCTURAL ENGINEERS

monstrosity as many feared at first, was in reality cast for a most heroic role in the history of architecture, comparable to the part played by the temples, basilicas and cathedrals of old.

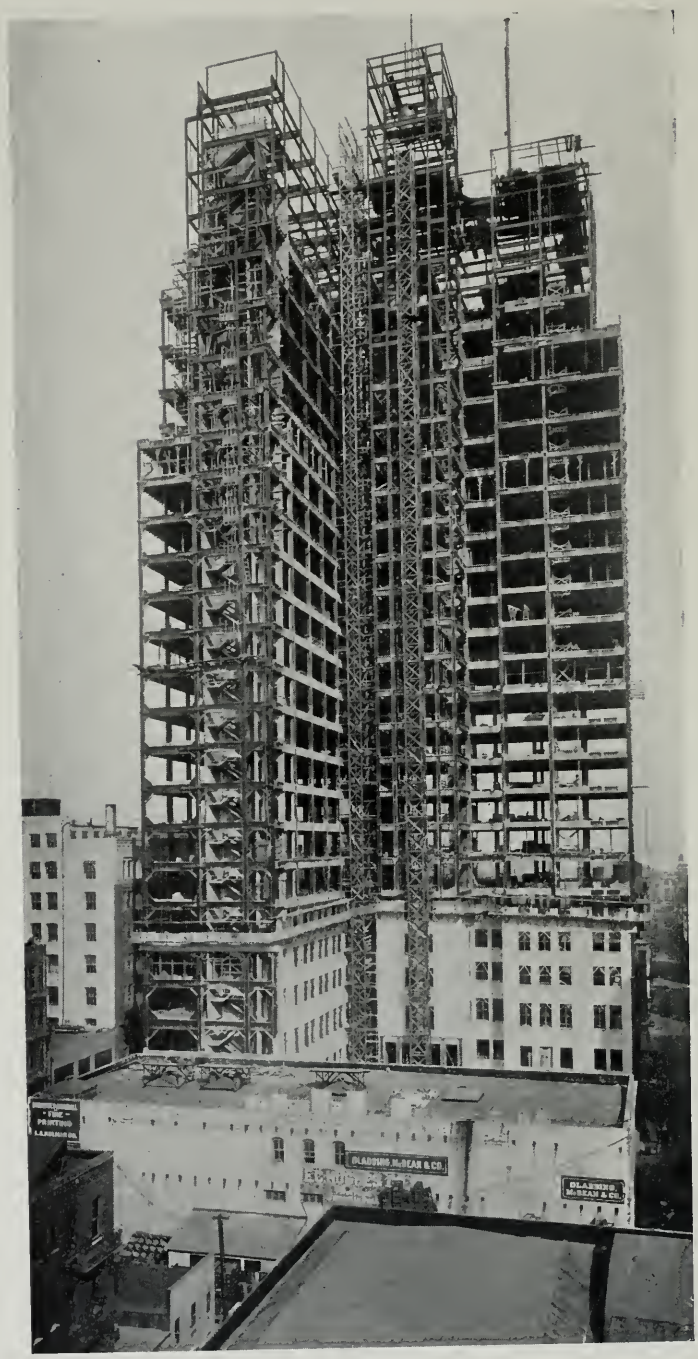
This is neither a plea nor a prophecy in favor of the capricious or wanton use of steel. It is merely a statement of what is now happening all over the country. The manner in which a steel frame can logically acquire "form" is in the main twofold. By articulation: in which the upper plan is a symmetrical group of unit pavilions growing up and out of the often amorphous lower portion as delimited by the lot lines; or "form" is achieved by regression: by which the outer steel columns are stopped off and the face of the building made to retreat as it ascends.

It is at once obvious that a well planned unit pavilion of a commercial building of two rooms and corridor between, with an eccentrically placed column, will not stand a treatment of regression except at the ends. An extra wide pavilion can be reduced by about a third of the outer span without spoiling the floor above; in which case however, the regressed columns and wall above must be carried on special beams over a void. It is also clear that where two typical pavilions meet and miter at right angles, a regression of the corner panel is possible. This eliminates the usual inaccessible corner room and gives a maximum effect of regression at a minimum sacrifice of space, more epecially when the building is seen diagonally.

It will be a surprise to most readers to learn that the Telephone building as it now stands is incomplete. The completed structure is in plan a perfect block letter "E," the lower bar on Minna street, the upper one on Natoma and the vertical stem on New Montgomery street. These three pavilions contain the working part of the floors, while the middle bar of the "E" contains the ten elevators. But in actual execution the upper bar of the letter has been cut back to within a dozen feet of the stem so that the plan is shaped like an "F" upside down or reflected. This being the case it is clear that the design should be judged at present only with the Minna or New Montgomery street facades in view at the same time. This aspect reveals a huge towering block which achieves "form" by a silhouette diminishing in stages, first by regression of a floor panel at the corners only, then by a lesser regression of the three fronts and lastly by a still slighter regression to the topmost attic parapet. When completed at some future date, what we must call a rear view will reveal "form" attained by articulation, mainly, for the huge expanse of 160 feet still retains the regressions of the other fronts at the corners but is cleft from top to bottom by a gigantic slot sixty feet wide and one hundred feet deep, in which the elevator tower emerges and rises and finally ends in the crowning square turret which carries the flag.

Thus it will be seen that the plan, as it occasionally changes from ground to roof, develops a "solid" of varied form by both the methods above defined, namely, by articulation on the rear and regression on three fronts.

Now it may be laid down as an axiom that, on a tower building, all sides are fronts. That is to say that above the roof line of surrounding blocks the word "rear," "front," "side" or "back" ceases to have any meaning. All boundaries are of equal importance. Indeed we might say that in special cases the real rear on the ground may become the real front in the air. As a matter of fact, this happens to be the case in this particular instance. A glance at the map shows us that



STEEL FRAME, TELEPHONE BUILDING, LOOKING EAST
T. RONNEBERG AND R. J. FISHER, STRUCTURAL ENGINEERS

AIR PLANE VIEW, TELEPHONE BUILDING, SAN FRANCISCO
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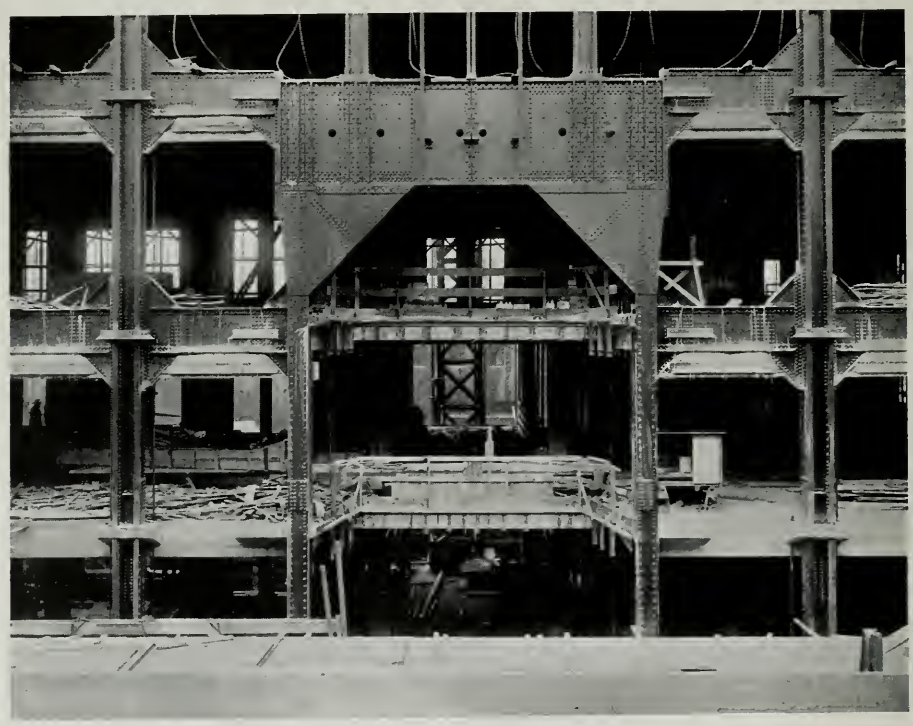
only a very small portion of the city of San Francisco, and that mostly the uninhabited water front, can view the Telephone building on any of its three ostensible "fronts" exclusively. Were it not for trans-bay ferry travel most of the people of San Francisco would have to make a special trip very much down town to see this building from any of its three regular "fronts." On the other hand, the slotted "rear" which does not front on any street at all, in reality faces a very much larger area than the other three put together. It is the front most often seen by the greatest number of people; the front also that catches the full glow of the afternoon and setting sun.

In spite of all this there is evidence in the plan itself that this front was considered a "rear" and the recessed area regarded as a light well. The windows are wider along these inner walls; terra cotta gives place to brick, (defensible enough up to a certain height) and the original plans showed an omission of much of the upper decorative features which were subsequently restored, a belated concession to the truth of the axiom above stated, that there is no rear on a tall building. Undoubtedly, when completed, this aspect of the building will be full of picturesque interest in striking contrast to the other three. However, one is tempted to speculate on the possible advantages of recessing the center on both sides instead of one; thus making two vertical slots of 50 by 60 feet instead of one, 100 by 60 feet: the plan meanwhile assuming the form of an "E" with upper and lower stems extended to the left in the form of a channel. Such speculations are, of course,

futile; but they are here considered briefly as another way of expressing the importance of first planning for the sky and then carrying the plan down to earth, rather than first planning for the ground and then continuing this plan up into the air.

Attention has been drawn to the principle of regression which is now being adopted to give novel and organic form to the "solid" or mass of many of the more recent skyscrapers and note was made of the fact that this process, unless confined to the ends or corners, was likely to embarrass a well considered plan for renting purposes. The Telephone building, however, is not for renting purposes in small office units; most of the space being, in fact, undivided, or of the loft type;



DETAIL OF STEEL GIRDER CONSTRUCTION OVER MAIN ENTRANCE
T. Ronneberg and R. J. Fisher, Structural Engineers

so that the narrowing of the three main pavilions above the regression of the 22nd floor does no harm to the five floors above.

Apropos of the fact that when a tall building emerges into the sky all sides are fronts and indeed very much more in the public eye than actual street fronts, it is conceivable, that at a future date, a zoning law may require all roofs to be level and limited to a given height, while steel supports for an elevated super street may serve a secondary row of retail stores, the attics of the block below: the corner buildings to penetrate the sky zone at the crossings only. Then again the time may come when tall buildings will disappear altogether and our cities become decentralized and spread out over the countryside. When

that day arrives our colossal office blocks will live only as memories, like the giant saurians of the geological past. And just as scientists explain the sudden disappearance of these monsters to the evolution of the first small mammals like rats who devoured their eggs, so it may be that some very little things like rust or "fatigue" of the molecules in steel, may bring about this sudden change that shall mark the doom of the brontosaurian buildings of today. Or it may come when Ford "flyvvers" crowd the sky as Ford "flivvers" now crowd the ground.

We now come to consider the surface treatment of this building which is the most remarkable thing about it, for, as we shall see, it is original and unique to a degree without precedent or parallel in modern

DETAIL BASE OF TELEPHONE BUILDING FROM NEW MONTGOMERY STREET
J. R. Miller and T. L. Pflueger, A. A. Cantin, Associated Architects

work as far as the writer's knowledge extends. We have seen how mass composition has been attained in the solid by vertical articulation and horizontal regression yielding a form and silhouette of decided distinction and dignity. In treating the various vertical planes of this structure in detail the designer had three dangerous things to avoid and two very desirable things to attain. He must avoid the mechanical monotony of vast plain surfaces uniformly punctured with windows. He must avoid the horizontality of classical tradition unsuited for vast high expanses. He must also avoid the elaborate detail of the logical Gothic treatment on account of its expense. But he must achieve unity and he must achieve simplicity in deference respectively to the eternal

NEW MONTGOMERY STREET ENTRANCE, TELEPHONE BUILDING, SAN FRANCISCO
J. R. MILLER AND T. L. PFLUEGER, A. A. CANTIN, ASSOCIATED ARCHITECTS

BRONZE DOORWAYS, FRONT ENTRANCE, TELEPHONE BUILDING

MAIN ELEVATOR LOBBY, TELEPHONE BUILDING, SAN FRANCISCO
J. R. Miller and T. L. Pflueger, A. A. Cantin, Associated Architects

ENTRY DOORS FROM THE INSIDE, TELEPHONE BUILDING, SAN FRANCISCO
J. R. MILLER AND T. L. PFLUEGER, A. A. CANTIN, ASSOCIATED ARCHITECTS

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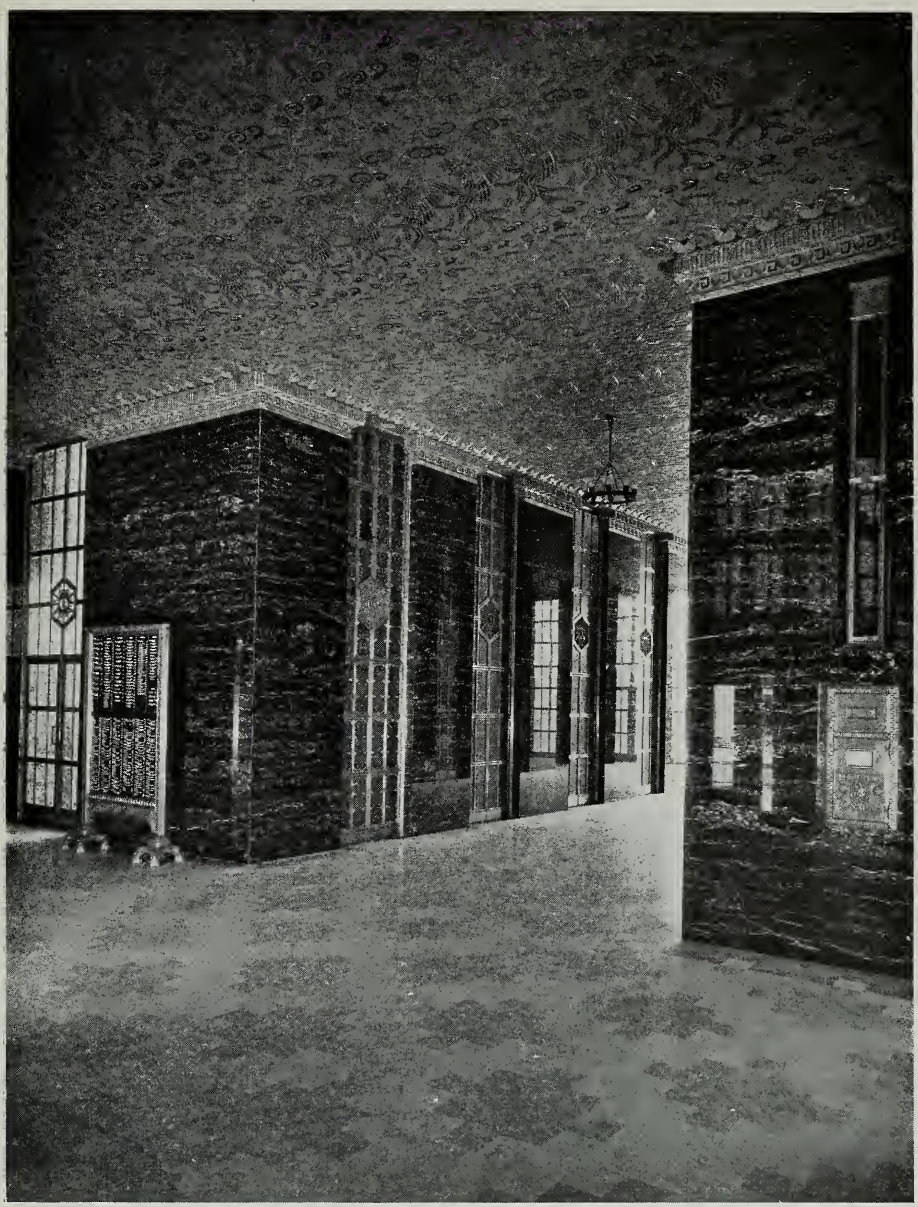


ELEVATOR LOBBY MAIN FLOOR, TELEPHONE BUILDING, SAN FRANCISCO
J. R. MILLER AND T. L. PFLUEGER, A. A. CANTIN, ASSOCIATED ARCHITECTS

TELEPHONE BUILDING AS SEEN FROM THE MISSION, SAN FRANCISCO
J. R. MILLER AND T. L. PFLUEGER, A. A. CANTIN, ASSOCIATED ARCHITECTS

TELEPHONE BUILDING FROM A DISTANT HILL, SAN FRANCISCO, CALIFORNIA
J. R. MILLER AND T. L. PFLUEGER, A. A. CANTIN, ASSOCIATED ARCHITECTS

Terra Cotta by Gladding, McBean & Company

DETAIL UPPER STORIES, TELEPHONE BUILDING, SAN FRANCISCO, CALIFORNIA
J. R. MILLER AND T. L. PFLUEGER, A. A. CANTIN, ASSOCIATED ARCHITECTS

NOTE—Another wing will be added in the near future.

"REAR" VIEW, TELEPHONE BUILDING, SAN FRANCISCO, CALIFORNIA
MILLER AND PFLUEGER, A. A. CANTIN. ASSOCIATED ARCHITECTS

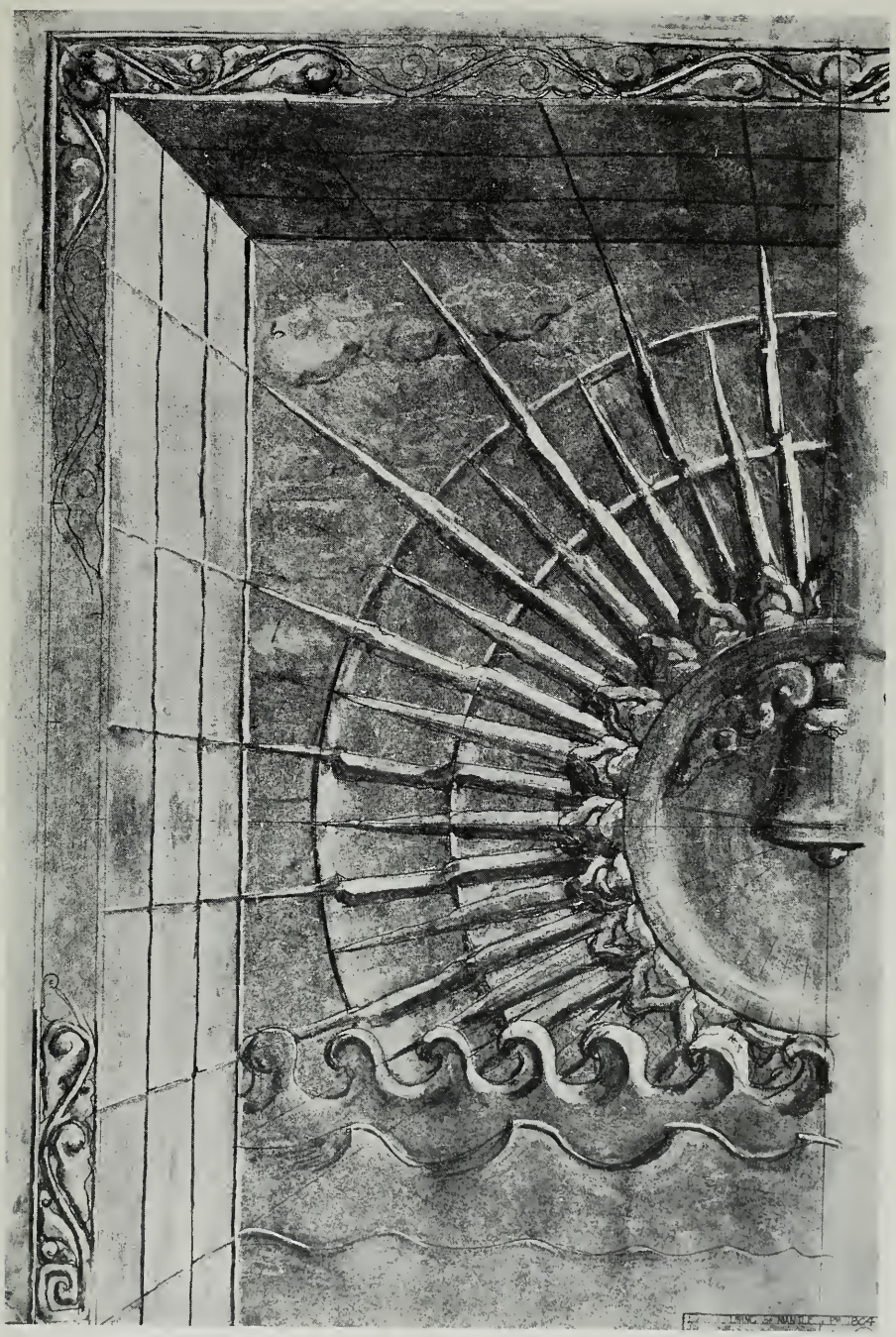
Eagles are twelve feet high.

DETAIL OF PENT HOUSE, TELEPHONE BUILDING, SAN FRANCISCO
MILLER AND PFLUEGER. A. A. CANTIN, ASSOCIATED ARCHITECTS

NEW MONTGOMERY STREET FACADE, TELEPHONE BUILDING, SAN FRANCISCO
J. R. MILLER AND T. L. PFLUEGER, A. A. CANTIN, ASSOCIATED ARCHITECTS

Lindgren-Swinerton, Inc., Builders

NATOMA AND NEW MONTGOMERY STREET FACADES, TELEPHONE BUILDING, SAN FRANCISCO
J. R. MILLER AND T. L. PFLUEGER, A. A. CANTIN, ASSOCIATED ARCHITECTS



DETAIL, TELEPHONE COAST DIVISION BUILDING, SAN FRANCISCO, CALIFORNIA
J. R. MILLER AND T. L. PFLUEGER, A. A. CANTIN, ASSOCIATED ARCHITECTS

decrees of all the Fine Arts as well as to the drastic demands of finance.

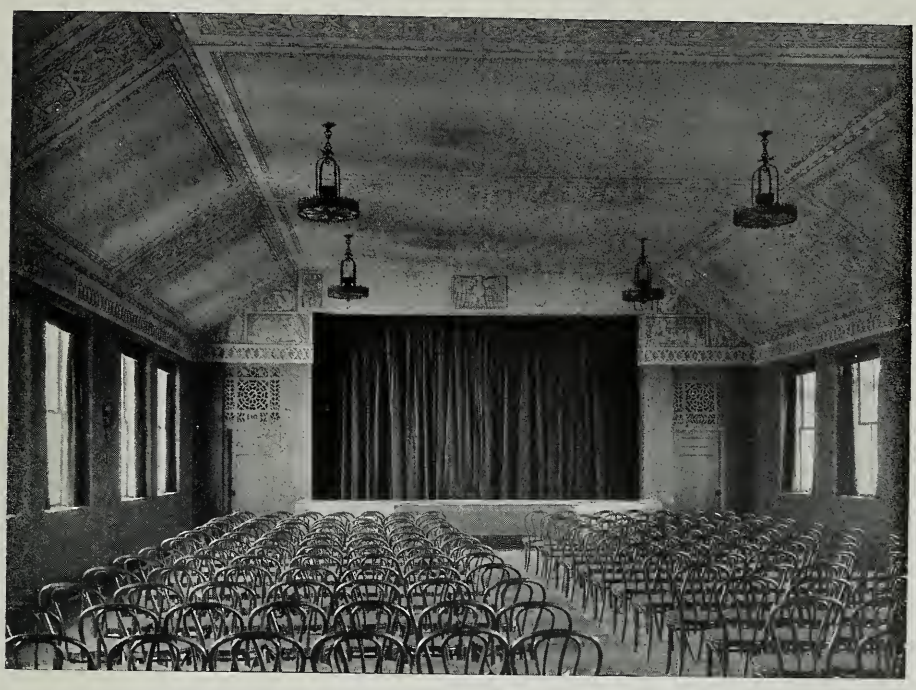
These negative and positive conditions have been met with astonishing success by methods demanding not only courage and unusual initiative but by positive creative genius. In the first place the use of any historical style was deliberately tabooed. This did away with all belt courses, cornices, ornaments, mouldings and projections of every kind whatsoever. In such vast facades, almost of the El Capital order of magnitude, this rejection of subordinate parts and piecemeal divisions makes enormously for unity, simplicity and economy at one stroke. Next, having ruled out all horizontal lines still further unity is given by added emphasis to the vertical ones. The entire structure thus be-

DETAIL OF SKYLINE, TELEPHONE BUILDING, SAN FRANCISCO
J. R. Miller and T. L. Pflueger, A. A. Cantin, Associated Architects

comes reduced to a cluster of perpendicular piers ascending the full altitude of the building with naught but an occasional ripple of interruption from pavement to parapet. This emphasis on the piers produces a still further sense of unity, by a method as logical as it is novel.

Immensely reinforcing this linear impression of oneness is the uniformity of color throughout the entire surface attained by the use of speckled Terra Cotta of the exact tone of pale grey granite. Having secured this basic unity it now remains to diversify it with some elements of organic variety and contrast, and this without the use of any horizontal lines whatever. Paradoxical as it may seem diversified bands of horinzontality are produced not by crossing or omitting vertical lines but by reduplicating them! To halve the window openings in the upper part of a building is no new device. It is in fact just now very much in vogue. In the Telephone building the same effect is worked out in an entirely novel way which will well repay a little careful study.

The whole building is divided into nine structural bays on the entrance front and eight on the side streets, (when completed). Each of these structural bays is divided into two window spaces by a secondary narrower mullion pilaster midway between the wider pilasters which follow up the steel columns of the frame. Seven central bays on the front and six central bays on the side define pavilions very slightly in advance of the corner bays. They continue on the elevation sheer to the top of the building with a 9 feet 6 inch regression however over the 22nd floor which, by the way, is an extra high one. The end bays on both facades, forming the slightly set-back corners, extend vertically as far only as the 18th floor where the square corner "panels"



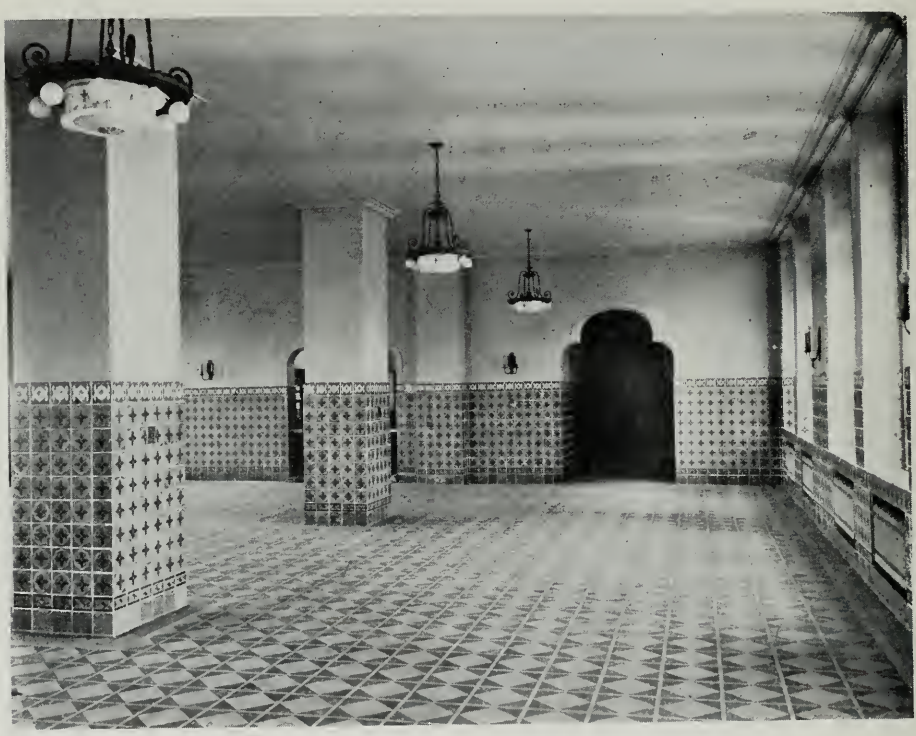
ASSEMBLY ROOM, TELEPHONE BUILDING, SAN FRANCISCO
J. R. Miller and T. L. Pflueger, A. A. Cantin, Associated Architects

which they define (in plan) terminate in a deck with square topped parapet walls. These square corner bays do not belong to the main body of the building considered as a design. This fact is indicated at the outset in the shape of the three pilasters enclosing them, for their faces are flat in plan, whereas the pilasters of the central pavilions are all convex on the face with a reversed ogee curve to each corner, in plan like a section through the back of a violin. The re-entrant angles of the main pavilions are now revealed from the 18th floor up clear to the top. We see them as solid looking clustered pilasters forming great holding pylons at the four corners of the main turret of the building. In horizontal section each shows twenty running feet of solid masonry from the jamb of one window to that of the next around the corner. This creates a splendid sense of strength and makes at the same time a striking foil to the super-fenestration of the walls between.

In contrast to the round-fronted main pilasters are the sharp

fronted intermediate ones, which, in plan, show diagonally splayed reveals meeting at a right angled edge. These softly shaded and sharply shadowed alternating vertical piers, especially when seen sideways and blended into one fluted shaft of sheer masonry, create an extraordinary illusion of both light and lightness beautiful and baffling to behold. They seem no longer clay blocks piled up from the solid ground, but dimmed sunbeams shot down from fretted clouds!

It is noteworthy that the piers between the window openings both great and small ascend with unruffled smoothness to the top of the building except for a slight ripple of incised ornament where they recede a few inches at the 4th and 18th floors following the reduced section of the steel "H" columns as the loads on these get lighter. This shrink-



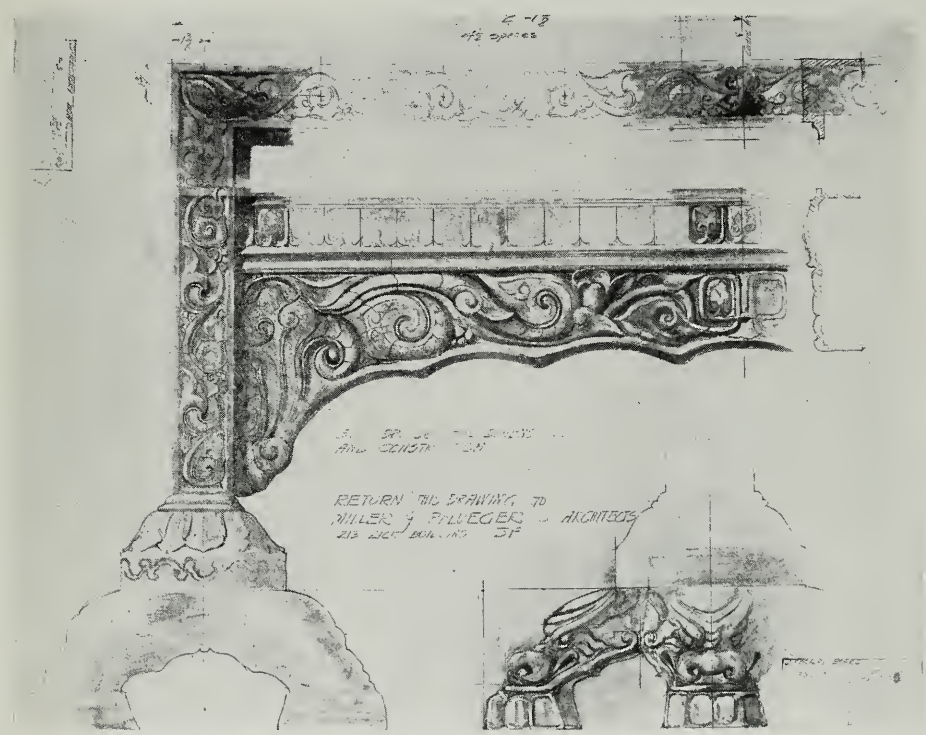
CAFETERIA FLOOR, TELEPHONE BUILDING, SAN FRANCISCO
J. R. Miller and T. L. Pflueger, A. A. Cantin, Associated Architects

age of the bulk of the building as it ascends is comparatively so slight that it is felt rather than seen. Otherwise, excepting for regressions of the fronts before mentioned, the pilasters both wide and narrow serve no part in giving horizontal variety to the fronts. Nor as we have seen is any projecting ornament carried on them much less across them.

As we said above, the effect of cross bands of masonry at harmonic intervals to impart organic subordination to the design is brought about by repeating the vertical lines of light down the fronts of the windows by an interpolated row of columns. These are engaged to the walls between window head and sill and pass in front of the windows in places as free columns or stems. These again, as they mount, carry screens of bifurcating tracery with finials and enfoliations repeated and diversified at rythmic intervals until they emerge in the final cresting which forms the skyline of the building.

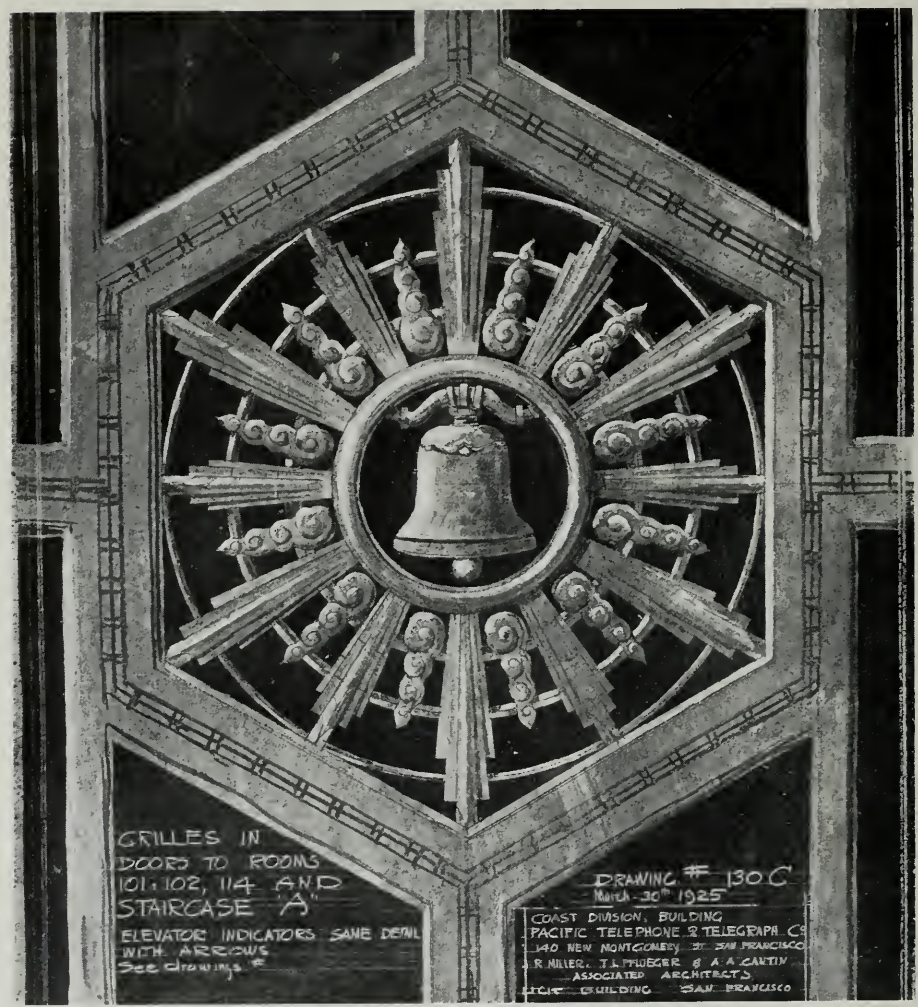
It is perfectly clear that this, the principal and only decorative feature of the building is carried and developed on a system all its own. It does not grow out of any existing part of the front, nor is it related to any members of the structural frame. It is independently created for the sole and only purpose of diversifying the fronts. In a sort of compensating spirit it makes up for the extreme parsimony of horizontal projections by a prodigality of perpendicular ones. It is a novel and striking innovation managed however with consummate artistic insight as we shall see.

Just as nature is one fundamentally as revealed by certain laws common to all the sciences, so art has also its unities disclosed in similarities of technique in its various branches, no matter how unrelated they



BRONZE DETAILS, TELEPHONE BUILDING, SAN FRANCISCO
J. R. Miller and T. L. Pflueger, A. A. Cantin, Associated Architects

may seem. In literature, especially the drama, also music, it is a common practice to prepare the mind in advance for what is coming, especially when a novelty, a climax or surprise is expected. The human mind seems to need this preparation for a new idea. If a strong flow of interest is to develop in some quarter, physchology explains that some idea of the mere direction in which to look for this event prepares the mechanical part of our attention in the right receptive attitude, thus releasing the more important emotional part of it to absorb the full value of the event or crisis to come. The introduction to a song or the overture to an opera first plants the melody in the mind to release some of our attention for the sentiment and the singer to come later. This principle is best seen in the drama. No playwright who knows his business would solve a plot in the last act the mechanism of which was not already made familiar in the first. In a recent radio



DETAIL OF GRILLE IN ELEVATOR LOBBY, TELEPHONE BUILDING, SAN FRANCISCO
J. R. Miller and T. L. Pflueger, A. A. Cantin, Associated Architects

play the heroine is saved from drowning by a young man masquerading as a senile infirmarian. But before this happens the audience learns of his surreptitious swimming feats in the nearby surf. In the play of "Hedda Gabler," Ibsen familiarizes us in an early act with the porcelain stove which, in a later one, plays so important a part, lest when the crisis comes we get more intrigued with the stove than the story!

Thus, in this design we are prepared for a strange interpolated system of decoration which reaches full expression at the top of the building by being introduced to part of its mechanism almost at the bottom. Over the main doorway and clear across what we may call the base of this building, in fact defining it as such, there is carried a

band of pseudo-solidity by repeating between the sill and head of each window a row of sconce-like stems or engaged columns; each with pendent and finial extending above and below the windows of the third and fourth floors respectively. This device not only marks the first stage of the great ascent by a bold horizontal belt of interest, but announces and familiarizes us with a motive of great importance which we shall meet with again and yet again. This episode is now forgotten for fourteen stories and then it re-appears, this time across the eighteenth floor, and then again across the nineteenth, giving in effect a double band across the building at the level of the first regression where the four corner bays of the building terminate.

We note here with interest two small details which are not insignificant, although they may seem so. First the top of the lower and the bottom of the upper stems are abruptly terminated in flat planes, suggesting that a connecting shaft could easily be inserted here down the front of each window. Secondly, the finial at the next sill above is carried higher than in the previous examples as though eager to grow and even expressing a definite intention to do so at the next opportunity. In truth, this enlarged finial is a double bud precisely prophetic of the expanded foliations which attain their full growth later on. Furthermore, the eye, following a bay still further up, will note rudimentary protruberances growing out of the heads of flattened pilasters where later on the aforementioned columns will actually attach themselves.

Meanwhile, at the twenty-first floor, which is an extra high one, the windows around the building have semi-circular heads and this seems to portend another change. For the fourth time these interpolated columns or stems appear at the window heads and at the twenty-second floor, a still higher story, they can no longer be suppressed but shoot boldly up in elegant tapering and detached shafts right in front of the windows towards the heads of which after sending down a grillage of herring-bone branches they finally open out into bold triple finials of a giant Gothic gable. These, carried all around between the plain piers which here abruptly end, combine to form the crested parapet of the second regression, where the three advanced pavilions of the street fronts now terminate. The piers now continue up the main inner turret through two more stories to the twenty-fifth floor where the windows are not only arched, but carried in effect through both floors in one recess without masonry dado to divide them at the floor and sill levels.

Once more, that is for the fifth time, there is a recrudescence of the stem motive, this time with more aspiring vigor than ever which carries it clear through two whole stories and past two whole tiers of windows where it terminates, this time, in triple massive lotiform mushroom-headed caps. The piers also are stopped off once more at this level forming a second low parapet behind which is a roof and gutter forming the final regression of five feet to what is a tall parapet and attic wall. On this innermost plane the piers again continue their journey up and the interpolated motive on the mid-window line again appears; first as a single stem, then in bifurcations which define quadrant openings in the firewall, then as fleur-de-lisian finials which ultimately overtop the piers in their race to the skyline — symbolic, we should like to think, of the final victory of will over necessity.

There remains the dominating tower of the glorified penthouse rising from the center of the mass of the building. It houses the machinery of the surviving elevators, the tanks and the smoke stack

now gathered to the center to shed its fumes under the base of the flagpole. It is square in plan, presenting a pair of windows to each of its four fronts. In design it repeats the motives of the rest of the building except that the eight finials over the four pairs of windows unfold to form a splendid perch for eight colossal eagles, standing twelve feet from beak to talon, scanning the world beneath in all directions and lording it over everything except the flag above.

Let no one for a moment suppose that the immense impressiveness of this great building is due to its mere mass: or that it just happened. No one could make a greater mistake. The whole structure is charged and saturated with thought and purpose; conceived with fervent imagining, and wrought with cold logic. If the attempted interpretations offered seem arbitary or mere after-thoughts, the reader errs again. The author of this design has infused into his work far more deliberate purpose than we have here even touched upon. Nor again should it be assumed that the utter originality of the structure, whether in its mass or surface is in any way due to scant familiarity with either historical examples or the teachings of the schools.

As an example of knowledge, restraint and reasonableness, attention is drawn to the handling of the main entrance. The fine dignity of this great symbolic portal in its simple proportions, (exactly 20 feet wide by 40 feet high) and absolute harmony with its surroundings show a breadth and bigness of treatment which can only be described as masterly. The sheer simplicity of the splayed opening with not a single extraneous feature to help it other than the motives of the building itself, is cleverly contrasted with the elaborated screen of perforated masonry over the doorway, fortelling in miniature the giant screens above. All this, while so easy to look at is, without precedents to work from, quite difficult to design.

Five is the mystic number of the Flowery Kingdom and at the five-fold bronze doorway itself with its five-part arch heads so oddly ornamented, we come to the first traces of Chinese influence which is such a surprising reaction to the absence of any definite style throughout the rest of the whole exterior.

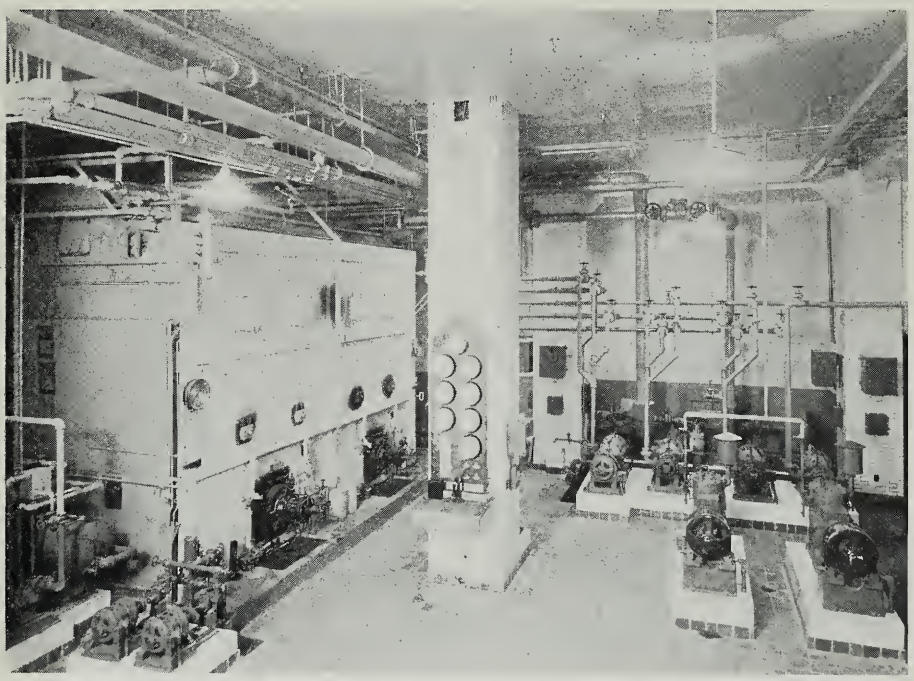
The walls of the elevator lobby are, like the exterior, devoid of horizontal lines, not even door heads or sills, for all openings are uniformly framed in bronze clear to the ceiling, with high rectangular panes of figured glass which give at once a sense of unity and a loftiness which mere feet and inches would deny. By this interception of high openings, the wall surfaces become a series of broad pilasters reaching clear to the ceiling. They are of tawny black polished marble in which waves upon waves of gilded veinings follow one another up and up until they seem to break in a polychrome cornice of billowy mouldings which spend themselves on the ceiling in foaming spindrifts of wavy gold. The ceiling itself is frankly and splendidly Chinese, with grotesque parades of heraldic monsters incised in a field of faded coral and burnished in pale bronze; the bronze of the grilles, the windows and the doors. The effect is at once strange, restful, gorgeous and yet severe. It typifies the rich redundant Orient disciplined to Occidental purposes, and suggests many things besides.

For instance, the old-time Immemorial East is now, in San Francisco, the Geographical West. That is, to us of the Pacific Coast, the

"East" is west of us. To the inhabitants of the Asiatic Fringe opposite us, the "West" is east; so that we may in truth paraphrase Kipling and reverse his verdict, because here on the Pacific Coast,

East is West and West is East
For the twain at last have met.

And here we see new architectural possibilities in the enormously rich offerings of China, India, Burmah and Japan; colorful, gorgeous and of inconceivable variety. Considering how the Greco-Roman and Renaissance inheritance has been exploited to the point almost of weariness, it is encouraging to think of the illimitable fields of inspiration lying petrified and unknown to us, in the temples and palaces of Asia. American architects are the world's masters in the art of creative



BOILER ROOM, TELEPHONE BUILDING, SAN FRANCISCO
J. R. Miller and T. L. Pflueger, A. A. Cantin, Associated Architects

eclecticism. In fact, American architecture is little else. Now that we have practically drained the western half of the Old World of its recorded art forms there still remains the east of the Old World to draw from, a far richer field in its bewildering accumulation of the raw material, if not the finished products of design. Our architects now tour the whole round globe where formerly they stayed in France. All that is needed is for our publishers to give us reproductions of Asiatic architecture, a field unduly neglected even by the Germans.

The many features of the interior of this great building are described elsewhere. We shall here touch on one item only. Over the mantelpiece of the Directors Board Room there is an empaneled painting by Arthur Matthews. It might be called an allegorical landscape.

On the right half of the picture in a valley under mountains aglow with the light of sunset we see smoke lines ascending from a camp of red Indians; our earliest form of "long distance." On the left, also in the glow of the setting sun, the new Telephone building is seen, typical of the latest in the art of communication.

But this is only one out of many similar touches of imagination displayed both in and on this unusual building. A symbol that is too obvious loses its poetic value. Therefore a certain vague suggestiveness gives an esoteric charm that a plainly labeled symbol misses. In looking up at this building many people will detect suggestions of the telephone receiver in the interpolated decorations of the upper stories. On the main piers can be seen an "open book" motive elongated to a symbolic rather than a too realistic form with feathery appendages suggesting old Homer and his "winged words." The zig-zag grillage across the windows of the twenty-second floor, (which by the way has a very pleasing effect on the inside) is the symbol for lightning or the thunder bolt, once the voice of God Himself, now tamed to carrying the voices of the people. In the crowning member of the elevator lobby right under the highest load of the central tower and suggestive of the great weight above, are modeled knuckles and three fingers, the orthodox symbol of the "Upholding Hand" of Buddha, the All-Powerful.

In conclusion it is safe to say that the new Telephone building is a complete surprise to the architectural profession and a positive delight to the public at large. Its majestic grandeur as seen through the mists of the morning from the water; or in the evening glow from the hills of the Mission; or in the mystic glory of night illumination, will excite the imagination of millions as one more triumph in the only form of conquest really worth celebrating, the mastery of Mind over Matter.

* * * *

Largest Corporation Office Building on the Pacific Coast

By E. V. COBBY, Building Engineer,
The Pacific Telephone & Telegraph Company

THE growth of the Telephone Company has been such that prior to the erection of the Coast Division building on New Montgomery street the executive forces of the company were occupying leased quarters in at least twelve different buildings scattered throughout the city of San Francisco. A careful study of the office requirements was made and, in consideration of the rentals being paid per square foot and loss of time in interdepartmental transactions, it was determined that quite a saving in annual charges would be effected were a building to be erected by the company large enough to house all departments. This study entailed considerable work, as a careful check had to be made of the number of employees, both male and female, and the size of their initial and ultimate space requirements for a term of years worked out in detail before even the preliminary plans for a building could be started.

The Telephone Company owned a parcel of land on New Montgomery street, and as this location was considered an ideal site, drawings for a building large enough to house the entire executive forces of the company in San Francisco were finally completed and actual construction work was started in January, 1924, and in May, 1925, the first department of the company was moved into the twenty-six story build-

ing, which, considering the magnitude of the task of planning and erection, is considered exceptionally good time.

The building is of the Class "A" fireproof type of construction with a steel frame, reinforced concrete floors, brick enclosure walls, and ornamental terra cotta facades. The building is "L" shaped in plan and rises to a height of twenty-six stories above the street level and beneath the sidewalk has a basement and sub-basement, and in addition to the twenty-six stories, the pent house contains four additional stories, making a total height of thirty stories above the sidewalk line, or a height from the sidewalk to the base of the flag-pole of four hundred thirty feet.

As the growth of the company warrants additional office space, the building is so planned that an additional wing can be added, making the plan of the ultimate building "U" shaped.

The trim of the interior of the building is metal with wood intercommunicating doors of solid flat design, which tends to decrease the fire hazard. All exterior sash and frames are of metal, which, with other fire resisting features, such as all stories being cut off from one another at all stairway landings, and at each opening of elevator shafts by fire-doors, makes the building one of the most fire-proof office buildings on the Pacific Coast.

An installation of nine elevators handles the small army of employees in the building and provision has been made for one additional elevator to care for employees when the ultimate wing is added to the building. These elevators are of the latest type with self-leveling and signal control and are equipped with all known safety devices.

The location chosen for the site of the structure is ideal, having a frontage on three streets, thereby isolating the building and overcoming the possibility of buildings in close proximity, which would spoil to a certain extent the monumental characteristics and sources of natural light and ventilation.

On the twenty-sixth floor of the building is located a library, reading room and assembly hall. The library is for the use of the employees and here will be kept for their use a complete selection of technical books, papers and data relating to the science of telephony and other information regarding general engineering practices. The assembly hall is equipped with a stage and moving picture projection room and will be utilized for talks on technical subjects by authorities on telephony and other engineering subjects, and moving pictures of interest to telephone students will be projected. The hall will also be utilized for special gatherings, such as dances and other entertainments, as may be planned by employees.

On one of the floors are located complete medical examination rooms, laboratories and an emergency hospital with a doctor and nurses in constant attendance, the service of which is gratis to employees. It is in these quarters that all medical examinations and such other services as may be necessary are rendered all employees of the company in the Bay region. There is also provided a cafeteria for the convenience of the employees and this is one of the most modern installations on the Pacific Coast and is fully equipped with all the latest developments in the culinary line.

A portion of the basement is utilized as a parking space for automobiles and a modern turntable facilitates access and parking for the large number of machines stored in the space during the day.

A deep well furnishes all water used for the building, with the exception of that for drinking purposes. A plant installed in the basement pumps and stores this water in a cistern of 150,000 gallon capacity, which insures at all times a sufficient supply for the needs of the building. There are also stored on the roof large tanks of water for emergency use for fire protection. The drinking water is distributed throughout the building by fountains on each floor. This supply is direct from the local water company, but, before being used, is filtered and cooled to the right degree of temperature for drinking purposes.

Considering the fact that the entire building is occupied by employees of the Telephone Company, it is probably the largest office building west of Chicago housing one concern.

* * * *

Elevator Equipment of New Coast Division Building

By E. P. FORD

THE elevator equipment consists of nine Otis Signal Control elevators, four of which travel to the twenty-second floor, four to the twenty-sixth floor, and one to the twenty-seventh floor. These elevators represent the latest development in elevator service. A brief description of their operation follows:

As a passenger announces his floor, the attendant presses a button on a metal tablet bearing two rows of buttons which indicate the stops in the up and down directions. The pressing of a button registers the stop on a part of the controller known as the floor selector. The controller will then operate to stop the car at that floor when the elevator is traveling in the direction indicated. Upon receiving his signal to start, the attendant moves a lever which actuates the pneumatic door operators on both hatchway and car doors. From this point until the doors have again opened, the action of the elevator is entirely automatic. At the completion of their closing movement, the doors lock, and close a contact switch which immediately starts the car. As the elevator approaches the nearest floor for which a button has been pressed, it slows down, the main operation is cut off and the micro drive automatically levels the platform with the floor while the doors are opening.

After the passengers for the floor have alighted and any waiting passengers have entered the car, the attendant again moves his lever, the doors close and the elevator proceeds to the next stop indicated on the selector. This continues until the elevator reaches the end of its travel unless a waiting passenger has pressed a button in the hall. The pressing of a hall button registers the call on the floor selector of the first car approaching in the proper direction, and as this car reaches the floor it comes to a stop and the doors open. When the elevator reaches the end of its trip, the directional control is automatically reversed, and upon the closing of the doors, the elevator will start in the opposite direction. Means are provided so that the attendant may reverse the direction of travel at any point, should the requirements of traffic so demand.

The operating duties of the attendant are reduced to pressing the buttons corresponding to the floors announced by the passengers, and initiating the closing movement of the doors. The multi-voltage control with which the main motor is equipped insures proper speed, and uniform acceleration and retardation. Acceleration and retardation are

calculated for the greatest possible speed which will not disturb the comfort of the passengers. The micro drive governs the accurate leveling of the car with the floor and the maintaining of that level during loading and unloading. The signal control is responsible for the stopping of the elevator at the proper floor and for the automatic opening of the doors, upon signal either from within or without the car. In the case of signal from the outside, only the first car approaching receives the signal, and this car will automatically stop, unless it is fully loaded and the attendant presses a special button which will permit his car to continue on its travel, and at the same time pass the signal on to the next following car.

The following summarizes the increased service obtainable with signal control elevators: The attendant is not called upon to remember directions and can turn his attention to the speeding up of traffic to and from the car. A greater rated car speed is possible, due to automatic stopping. The automatic opening and closing of the doors cuts the time of this operation in half. The automatic leveling of the car does away with the time consumed in making false stops. Precise, swift, automatic operation impels the passenger to move quickly. A saving of only a fraction of a second in each operation means a saving of many seconds in the round trip time and a consequent lessening of the interval between cars. Power consumption is at a minimum. Multi voltage control increases or decreases the required voltage automatically. The elimination of false starts and stops, which on the manually controlled car switch elevator exceed the normal stops by as much as 50 per cent, and the smooth operation of the elevator do away with undue strain on the machinery and reduce wear and tear.

* * * *

Studies of Curing Concrete in a Semi-Arid Climate

"STUDIES of Methods of Curing Concrete in a Semi-Arid Climate," by Harrison F. Gonnerman and C. L. McKesson has just been published as Bulletin 15 of the Structural Materials Research Laboratory, Lewis Institute, Chicago.

This investigation was conducted at Sacramento, California, as a co-operative research by the California Highway Commission and the Structural Materials Research Laboratory. The climatic conditions were quite unfavorable for the proper curing of unprotected concrete, but are typical of those encountered in semi-arid regions.

The experiments were carried out on 7 by 10 by 38-inch Portland cement concrete beams made out-of-doors and cured in the open. Curing methods included:

(1) Covering of wet earth,
(2) Covering of asphaltic paper,
(3) Surface application of flake calcium chloride,
(4) Surface application of sodium silicate,
(5) Air exposure.

Five hundred eighteen beams were tested in cross-breaking with the cured surface in tension at ages of 3 to 90 days. The hardness of the cured surfaces of the beams was measured by a ball-indentation test. Compression tests were made on 175 6 by 12-inch cylinders and prisms in order to secure a measure of the quality of the concrete in a standard test.

In comparing the relative efficiency of the different curing methods, the strength of the concrete cured with earth wet 7 and 14 days (which showed practically identical results) was taken as the standard. The "strength-ratios" for the different methods of curing were based on the following values of modulus of rupture of 1-2.2-3.0 concrete: 7d., 445; 14d., 470; 28d., 535; 90d., 600 lbs. per square inch. (The 28-day compressive strength was 4000 lbs. per square inch.)

The principal conclusions from the tests are:

(1) A curing method is efficient which maintains the moisture content of the concrete during the early stages of hydration, about equal to the original mixing water. Wet-earth curing gave the best results; this method apparently supplied moisture in sufficient quantity to replace losses due to evaporation and to absorption by subgrade. Curing methods which permitted high evaporation losses gave concrete of low strength.

(2) The tests showed that concrete cured under earth wet for 7 or 14 days was only slightly stronger than when cured under earth wet for 3 days. In view of this and of the small rate of increase in strength after the 14th day it may be concluded that with temperature no lower than prevailed in these tests (70°F) concrete pavements cured by covering with wet burlap for 16 to 24 hours and then with earth kept wet for 7 days, may safely be opened to traffic in 14 days.

(3) Curing with a surface application of flake calcium chloride, 2½ lbs. per square yard, gave strength-ratios of from 88 per cent at 7 days to 83 per cent at 90 days; with less than this amount and with 3 and 5 lbs., there was a slight reduction in strength.

When the calcium chloride was washed off after 3 hours, the strengths were reduced perceptibly; washing off calcium chloride after 1 day gave essentially the same strengths as when left on the surface.

Surface hardness for calcium chloride-cured beams was considerably less than for beams cured with wet earth or with asphaltic paper.

(4) For beams molded and cured in concrete forms using calcium chloride, 2½ lbs. per square yard, the strength-ratios ranged from 100 per cent at 14 days to 89 per cent at 90 days. The strengths in this case were about 12 per cent higher than for beams molded in wood forms and cured with a similar amount of calcium chloride.

(5) Asphaltic paper curing gave average strength-ratios ranging from 92 per cent at 7 days to 78 per cent at 90 days; surface hardness was almost as high as for wet-earth curing.

(6) Both air curing and sodium silicate curing showed low strength and surface hardness. The strength-ratios for these methods of curing ranged from about 77 per cent at 7 days to 74 per cent at 90 days.

(7) Indentation loads used in measuring surface hardness averaged 21 times the modulus of rupture; the greatest surface hardness was found for concrete of highest flexural strength. This method of test showed that calcium chloride, sodium silicate and air curing produced a more pliable surface than wet-earth or paper curing.

* * * *

No Hope of Compensation

"I'll tell the world it's tough luck," said the bricklayer.

"What's the matter?" asked the plumber's assistant.

"I dreamed about this job all last night, and yet if I was to ask them to pay me overtime they'd laugh at me."

What About Local Architects?

By L. C. MULLGARDT, F.A.I.A.

BECAUSE it appears that San Francisco's building activities disclose a pronounced number of "imported" architects at their helms, you have asked me for an analysis on the subject. "What about local architects?" might easily be disposed of by quoting the old proverb, "A prophet is not without honor save in his own country," but that would not be complying with your request for an analysis.

To analyze correctly, requires intimate knowledge of every circumstance which lead to each result. It would not be an easy matter to secure such information.

As a beginning, I should wish to acknowledge that the owner has indisputable right to elect his architect regardless of geographic considerations. All architects, except such who may be selfishly biased, will agree in the opinion that any honorable means which culminates in a truly creditable result, justifies itself.

To be sure, there are innumerable varying causes and reasons which lead to selection of outside architects. This applies to all communities, including our own San Francisco. It does not follow that an owner stigmatizes local architects as less competent, when an outside architect is employed.

Sometimes outside capital investments are based on preliminary plans and estimates prepared by outside architects who are conveniently near for frequent conferences.

Sometimes percentage builders—"Managers of Construction," are in control of the situation and establish sweet harmony between owner and their favorite architect, wherever he may be located. Such builders know what they want and what they want the owner to do; therefore, much depends upon the selection of the architect with a reciprocal disposition.

Intimate acquaintanceship between owner and architect frequently determines selection, regardless of locality or anything else.

Exalting recommendations from sources considered trustworthy oftentimes lead to selection of outside architects.

Then there are the more common causes of architects intensive self-recommendation; also, offers to invest personal capital; also to secure other investments to meet owners deficient funds; also, proposals to render architectural services at the lowest cost to the owner, which frequently have a deciding effect in the selection of an architect from elsewhere.

Then there are the self-styled "Architectural Experts" who convincingly present claims on knowing and doing anything, in fact everything, much better than any local architect could possibly do it. These "architectural experts" conduct a systematic correspondence school for prospective clients, wherever they discover a prospective job; they pursue every heard of chance with amazing gall in self-recommendation, and are frequently selected by believers, because there are many people who have an irresistible tendency to speculate on fine promises, however vague and insecure they may be.

There is also the irresistible, ingraft fascination to import things, especially from the East. To the great majority, "East" has always been the market supreme for similitudes of fish, flesh, fowl, fruits, flowers, art, architecture, architects and other annoyances, to some people, when imported by others. The glamour which hovers over

"Eastern importations" was doubtless justified successively from the Atlantic to the Pacific, when each section of this continent was still in embryo state of development, and during which each puppy section had to rely upon its parental East for cultivated sustenance.

Great men have developed science amazingly during the last half century. Science is the right hand of Providence in disseminating knowledge and universal productiveness. Science has actually amalgamated West with East, so that there is no uncommon differential whereby to discriminate between them, unless judgment is based on comparative characteristics, then it becomes largely a matter of personal preferment. Verily, I say unto you: the "Three Wise Men from the East" have multiplied and multiplied, even to the remotest corners of the earth—than which there is no greater miracle.

If some of us "Westerners" have an inherent taste for Eastern cheese, and therefore consider it better than our own, why should we not indulge ourselves in that state of mind. If others of us consider the Eastern architect wiser and better than our own, to solve our problems—why should we not indulge ourselves in that state of mind, as well. We must not forget that old customs unconsciously develop into fetishes. To endeavor sudden reform of fetishes would likely result in the extermination of the follies of everyday life, and that would probably be the end of most of our respective occupations.

Commodities and personal attainments acquire increase value and esteem according to increase ratio of geographic distance—Eastward. East continues to impress West with the traditional belief that West cannot be East; West accepts that old impress resignedly, regardless of world progress and Western achievement.

Measuring progress by time, personnel of population, education, culture, moral and physical standards, our West is not second to any East. Our architects are equally high standard; they are required to obtain state license to practice architecture through critical examination. San Francisco alone has over two hundred registered architects. Some of them are doubtless exceptionally talented and will astonish the world with their genius when given a chance.

East does not call West for its architects. West repeatedly calls East for its architects and West takes it for granted that East justifies its attitude on the score of qualification, and follows. No organized effort has been made in the United States to classify architects according to merit. That would be a profitable thing for our country and for the good of the profession; but it would not be a popular movement to inaugurate—not with the practitioners.

The P. P. I. Exposition, 1915, in San Francisco, had eleven architects on the Commission—eight of that number were California architects, and three were from New York City. That Exposition is universally acknowledged the best, architecturally, that the world has ever created.

California has secured excellent results out of its architectural talent. This State has not yet reached occasion for constructing many large and lavish buildings, such as the East demands. Such structures make a profound impression upon the people of our State, who take it for granted that it must require the services of an Eastern architect to create such structures for the West, when the opportunity presents itself.

California does not do things which give California architects such

opportunities as the East can afford; nevertheless, California architecture is distinctive and distinguished. It commands world interest and admiration. Most California architects have had advantages of education, office and field training, travel and practical experience, at least equal to the average architect, elsewhere. Architectural talent is essentially a personal endowment and therefore as indigenous to California as elsewhere.

This, Mr. Editor, is the end of my analysis, and I still maintain that owners may elect their architects or buy their cheese, regardless of geographic limitations. I also believe that Western architects and Western cheese will continue according their respective Eastern cousins the same generous, loyal courtesy, which has been ascribed to all true Californians.

* * * *

Says: "Test Brick Under Structural Conditions"

ACCORDING to Mr. D. Knickerbacker Boyd, member of the firm of Boyd, Abel & Gugert, architects of Philadelphia, any requirements for an individual brick should be based upon the performance expected of the collective units when assembled under actual conditions in the form of a wall or pier rather than upon the performance of the unit itself, and then such requirements should be workable and elastic enough to provide for the selection of the different grades of brick common to each locality and suitable to appropriate conditions of use.

Mr. Boyd made the foregoing statement in a paper on "Brick," presented at the last meeting of American Society for Testing Materials. Mr. Boyd is chairman of the Committee on Promotion of Knowledge of Brickwork in that society.

Mr. Boyd's paper evoked much discussion and favorable comment by many of the professional and technical men present because the specifications for building brick have been criticised in that they are too theoretical, too technical, and too scientifically precise as to the individual units without sufficient recognition of the locality and process of manufacture and the requirements as to actual methods of application and intended structural uses.

Mr. Boyd pointed out that as bricks are used for foundations, bearing walls, curtain walls, party walls, fire walls and piers very universally, the physical requirements for each purpose could readily vary considerably. It has been found that different bonds, or methods of laying the brick, influence the strength of the wall to a great extent. All of these things and many others must be fully studied and considered before a specificational requirement can be considered final. Comparatively few tests on walls have been made and many more are needed.

Mr. Boyd discussed these features in his paper and brought out the difficulties encountered in establishing tests giving information on which can be based recommendations for actual use in buildings. In connection with the absorption of a brick, he pointed out that it is more important to know the resistance of any building material to freezing and thawing, especially in climates where severe winters are encountered, than to determine any theoretical limits of absorption, saying in part:

"There is one factor which seems to have great bearing on the interpretations of laboratory tests of brick in reference to absorption and freezing and thawing. Practically all tests that have been made

heretofore have been made on new brick. There are, however, thousands of buildings in this country in which brick has been subjected to the rigors of a hundred and more severe winters and an equal number of torrid summers. By testing these bricks, when they are available, a knowledge of how freezing and thawing has really affected brick might be obtained and this information used as another basis on which to interpret the results of laboratory tests and arrive at a conclusion which will be substantiated in actual practice.

"Take as a well-known example, Independence Hall, Philadelphia. This building has been subjected to over a hundred and fifty winters of freezing and thawing and the bricks are apparently in perfect condition. It is not known how laboratory tests might have classified these bricks, but they might not have indicated this wonderful life and service rendered to date with apparently centuries yet to go."

* * * *

Philippine Mahogany—Some Light on Its Worm Holes

By C. H. WHITE, of White Brothers

PHILIPPINE hardwoods have found great favor in American markets. The most popular one is what has been known for twenty years or more as Philippine mahogany. The term usually is applied to a mixture of Tanguile and Lauaan. They belong to the same family, the Dipterocarps, and merge into one another in appearance, color, texture and grain in such manner that in the Manila market they are classed together as Philippine mahogany.

The Federal Trade Commission is at the present time making investigations into the right of dealers and manufacturers to designate Tanguile and Lauaan as Philippine mahogany, inasmuch as these woods do not belong to the mahogany family. A complaint has been made to the Commission that the use of the word mahogany in this connection deceives the public and injures the business of those dealing in genuine mahogany. To those familiar with the industry, however, this is an academic question only and it will undoubtedly be settled in due time. The fact of its being taken up by the United State Government shows, nevertheless, the importance which Philippine hardwoods are assuming in the woodworking industry of the country.

Philippine mahogany comes in two shades of color—red and white. A better naming would be dark red and light red. The light colored or pink wood can be stained to exactly the same appearance as the dark red and is cheaper.

Like a great many tropical woods Philippine mahogany is subject to the attack of worms. These worms, however, make only the finest pin or needle point holes, are not very numerous and are, in actual use, no defect because the filler and finish cover them up. Philippine mahogany can, however, be obtained in a grade which is practically free from worms, that is, within a leeway of five or ten per cent.

In the first and second grades, therefore, there are two kinds of Philippine mahogany:

(1) Free from worms (not over five per cent wormy).

(2) Wormholes no defect (any amount of pin worm holes allowed).

The only difference in quality between these two grades is in the number or quantity of pin worm holes. Both grades are clear as far as defects other than those mentioned are concerned. The difference in price, however, is greater in proportion than the difference in quality.

THE MAIN ENTRANCE GRILLE
M. Brandt, Iron Worker

The Exposition of Decorative Arts in Paris, 1925

By REDDICH H. BICKEL, Staff Correspondent

PERHAPS the most pleasing way to view the exposition of Decorative Arts in Paris is from the air; it forms such a bright color spot in the gray-green tone of the city and is so beautifully framed by the avenues of trees and long lines of apartment houses, but so few have the privilege of seeing it from such a vantage point that I would suggest they see it by night for their first impression. Darkness lends enchantment, the soft illumination intrigues, and one is lulled to peaceful contemplation of the fanciful forms presented in the semi-obscurity. The music of falling water is everywhere, reaching the height of its power in the sheet-like waterfall at the Alexander Third Bridge and softening down to the delicate "plash" in the pool under the trees along the Cours la Keine—that lovely lane laid out by Queen Marie de Medicis so many years ago.

One of the most difficult situations was that of placing this exposition in the city so as not to interrupt the daily life, and the comparative ease with which the Esplanade of the Invalides and the river banks were adapted for the purpose is another example of the value of great open places and abundant circulation to a mighty city. Here is the exposition right in the heart of the city and yet there is no congestion. The traffic routes cut by the grounds have been diverted along the lower quays under the bridges and around in a very dextrous manner. An auxiliary bridge was thrown across the river near the Concorde. One can go from his hotel to the grounds in ten minutes by the ordinary bus or tram routes, and this makes the grounds a favorite rendezvous for lunch or tea.

It is necessary that one be put in a sympathetic mood for this is a new kind of exposition. In the first place one is struck by its sim-

plicity. The setting is a grand one, entering as one does, between the grand and Petit Palaces by the principal avenue, which then crosses the bridge and stretches away to the Dome of the Invalides, but besides this, there is nothing grand about the exposition itself. The only approach to monumental scale is in the great stairway built in the Grand Palace, which occupies the entire width of the building and produces an agreeable effect of great size and majesty. The scale of the other buildings is small and there is a picturesqueness about the disposition that diminshes the feeling of uniformity and gives one an intimation of a different desire on the part of the planners from that of the old conventional treatment. In the second place one feels he is in a world of new conceptions and there is no doubt about it. Here is little sympathy to be found for old axioms. Henceforth these will repose in

ESPLANADE OF THE INVALIDS, CITY OF LYONS BUILDING IN FOREGROUND
Tony Garnier, Architect

libraries and museums to be used by schools and for reference, the designer of today studies more his materials, their possibilities, and less the canons of other ages. And what is the result?

Here we have a development of this new spirit. Judge it not harshly, it is not a perfect thing in any respect and must not be compared with culminative periods of former artistic developments; it is merely a step in the long trend towards a regeneration of art. Like any new growth it is fresh and full of spirit, angular, inharmonious in many ways, fighting with itself. But it will succeed, is succeeding, because it is the result of natural tendency, is based on sound principles. Art and science have come together here more closely than anywhere else in many years. If not so marked in the bigger effects, surely it is in the smaller, in the quality of the exhibits themselves.

The exhibit buildings are of semi-fireproof construction, nearly all are brick, concrete, with asbestos board partitions, or hollow tile, very little wood being used. Most of them are to be kept for future use. The decorative features, gates, fountains, etc., are more temporary so that they may be changed from time to time. In the colonial buildings the construction often follows local custom, as in the Equatorial Africa building the walls are bamboo fibers strung on bamboo framework and stuccoed over, the plasters working against each other on opposite sides of the wall in putting on the stucco; and in the Japanese building, which represents a dwelling in Japan. Marble and tile work are much in evidence, one arcade a half mile long is studded with beautiful marbles from different parts of France, and at the Sevres porcelain exhibit a blaze of colored faience greets the visitor. Two of the most interesting

ALEXANDER THIRD BRIDGE, SHOWING TREATMENT OF EXHIBIT BOOTHS

features at the show are glass and metal work. Lalique has designed a glass fountain which, unfortunately, is poorly illuminated, and he with others have many doors and windows illustrating their art. They have also made a tile of glass for pavement or wall treatment that is most successful. This is of very durable glass, translucent, in which a design has been stamped. In metal work the forged iron door and rail grilles are splendid examples of this art, the frequency with which these appear as one goes about the exposition is very pleasing.

As one enters the main gates and passes the curious stand of the "Intransigeant" (the Evening Paper), the first sight to greet him is the Rialto-like treatment of the Alexander Third Bridge, probably the weirdest creation of all and, while it may not be pleasing, it is highly amusing. Ahead stretches the long Esplanade of the Invalides, ending

FOUNTAIN OF GLASS (CENTER) BY LALIQUE

COTTAGE OF A RICH ART COLLECTOR, BY RUHLMANN
Statuary group on right "The Three Graces," by Janniot

SEVRES PORCELAIN EXHIBIT
M. Patout, Architect

BON MARCHE STORE EXHIBIT
M. Boileau, Architect

WEST AFRICA PAVILION

at the dome, and lined with the provincial and trade pavilions. The vista is partially broken halfway by the Sevres group. Looking down the river, Paul Poiret's flotilla brightens up the Seine, especially at night, when gay parties dine and dance in these brightly painted barges, moored along the lower quays. In this direction is the Amusement Center with its Alpine (Scenic) Railway, Child's Village and side-shows. On either side of the Esplanade are the tower restaurants, concessions of the wine interests. At the far end is the lovely Arts and Trades Court, flanked by the Library and Pert's theater. Some of the more interesting pavilions along the Esplanade are reproduced here. The Bon Marche Store exhibit by Boileau, the Sevres porcelain exhibit by Patout, and Patout's pavilion of a rich art collector designed and furnished by Kuhlmann. In back of this is an interesting statuary group by Janniot, the three graces, showing how charmingly color can be applied to sculpture.

Across the river on either side of the entrance gates are the most restful sections of the show: here under the trees are the smaller pavilions and tea rooms, grouped about fountains, pools and surrounded by flower beds and shrubs. A number of perfumery manufacturers have installed their booths here and the air is soft with the fragrant fumes given out. Near the Turkish building the scent is all of the East—almost a scented garden of the Arabian Nights. The river nearby is not forgotten, water carnavals are held nightly, there are boats of all kinds for trips up and down stream, boat restaurants are most popular, but best of all is the water itself, undisturbed by man, becoming as it does, a reflecting basin for the gay illumination.

* * * *

An Architectural Distinction

The Toledo Blade apologizes for having called a breakfast nook a room, and explains that there is no room in a breakfast nook.

Lump Sum Basis for Structural Steel

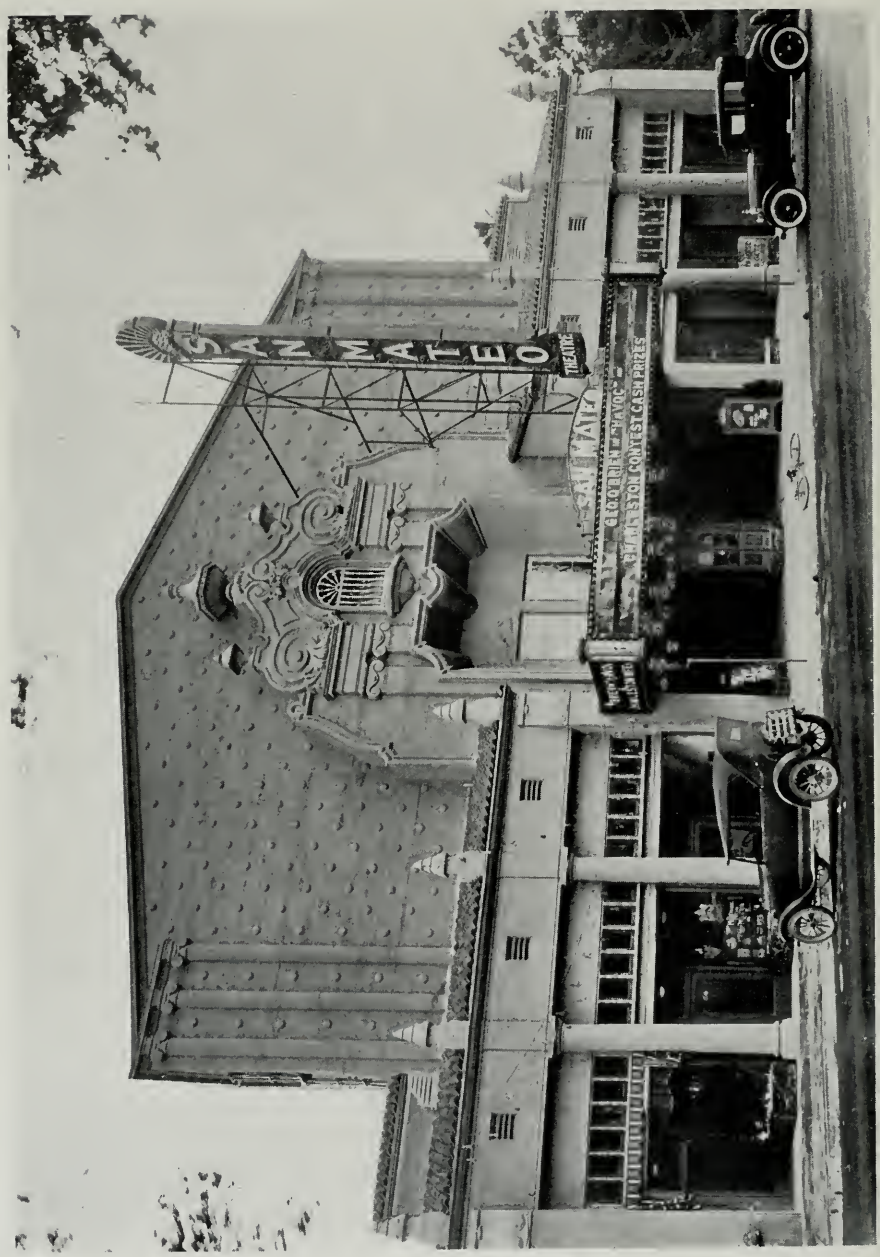
STRUCTURAL steel will cease to be sold on a "per pound" basis if the action of fabricators located within the metroplitan district of New York City is duplicated in other centres. Through the Structural Board of Trade, Inc., it was decided a few weeks ago, through a committee of engineers and contractors, that all contracts made after November 1, 1925, would be based on complete plans and specifications for structural steel and for a stipulated amount instead of for a price per ton, based on very meager preliminary sketches.

This latter method, it is readily apparent, is merely a gambler's guess because of the wide variation of detail which necessarily is an element of structural steel designing. It is as ridiculous and unscientific as the practice of some contractors of making contracts on the basis of the cost per cubic foot of contents or square foot of floor area. Observation has shown that such practices always lead to disaster.

At one of the meetings which led up to the above mentioned recommendation, the engineers were unanimous in their belief that the fabricators were entitled to completed plans and that incomplete plans were an annoyance to all parties concerned, causing the architects, owners and the engineering profession to suffer as much as the fabricators themselves. On fully 95% of all contracts let, the lump sum bid was acceptable to those engineers present. It was suggested that there might be reasonable exceptions, and that 5% would undoubtedly represent a fair allowance. To protect the few exceptional cases, it was recommended that a way be found to permit of a per pound price on contracts that might fall within this class. The fabricators, presenting their reasons for adopting the changes, based their arguments upon a desire to tie up their erection costs with their shop costs. They referred to additional work, changes and alterations which in many instances were expensive though no provision was made for proper payment.

The recommendations, in principle, provide that all plans shall be prepared according to the best engineering practice, showing all labor and material of the various classifications required and specifying the conditions under which the work is to be performed. The recommendations also require that all plans shall show a complete design, with sizes, sections and relative location of the various members, with floor levels, column centres and offsets figured, and shall also show the character of the work to be performed with sufficient dimensions to permit of the making of an accurate estimate. Plans are to be made to a scale not less than one-eighth inch to the foot and large enough to convey the information adequately. All wind bracing and special details when required will have to be shown in sufficient detail regarding rivets and construction to permit of an accurate estimate of the cost.

No more guessing is to be allowed as to the items that are to be included in the estimate, and, in all respects not covered by the specifications, the Code of Standard Practice of the American Institute of Steel Construction is to govern. The fifth and last requirement is that "inspection be called for in specifications under 'Inspector' and that the amount of money to be included must be specified and that the inspector be appointed by the engineer."



SAN MATEO THEATRE, SAN MATEO
MORROW & GARREN, ARCHITECTS

An Essay in Modern Architecture

By IRVING F. MORROW*

EVERY now and then the professional journals carry an appeal for a modern style of architecture. At times, even, feature writers in the more popular press fumble around with the idea. And whenever a discussion is started, it appears that people divide temperamentally into two classes—those who assume that the history of architecture ended with the eighteenth century, and those who assume that it began with the twentieth (the only point of agreement being contempt for the nineteenth and its works).

I do not see how a thoughtful architect can fail to be troubled, at least in some degree, by the structural and expressive irrelevance of by far the greater part of the architectural design of the last hundred years. Structural principles and materials unprecedented in the history of the art have become all but universal; new social and psychological outlooks have led in all the other arts to novelties in matter and manner too insistent to be overlooked; changed conditions of living and working have altered the requirements of the architectural program. In the face of all this the dominant preoccupation of architecture has been to impress buildings into a resemblance as close as practicable to those of some arbitrarily chosen period of the past. Confronted by spiritual and material changes no less significant than those which stimulated, say, a departure as unique as Gothic architecture, we seem unable to rise above a pottering around with historical relics. In a word, with some, at least, of the conditions for creation operating, we have ceased to create.

The root of the trouble, if so complicated a phenomenon can be said to have a single root—at any rate, one of the most important roots of the trouble is the divorce between the architect and the engineer. It is not necessary to discuss here how this situation has come about. Every architect, however, knows that in the great periods of past achievement the people responsible for the stability and for the appearance of a building were one and the same, or at any rate in the closest of association. He knows also that in nine cases out of ten, in a modern building requiring engineering services, the procedure is essentially as follows: The architect makes a design, calls in the engineer, discusses perhaps the merits and economy of alternative methods and materials for constructing the design, and finally turns it over to the engineer to insert within it a stable structure. Sometimes the engineer meets difficulties in keeping inside the design. In matters of minor importance the architect can be counted upon to make slight changes; but in cases seriously affecting the "architecture" the engineer is generally driven to such devices as his ingenuity may suggest and his conscience can permit. The inevitable gaps and maladjustments between these unco-ordinated activities are covered over by ubiquitous furring. Time was when there was of necessity some relation between the appearance of a building and the way it was built. Today, with the aid of the plasterer and the painter, we have changed all that. Is it to be wondered at, then, that architecture has lost the reality of structural significance; that, in fact, many serious students of aesthetics maintain that the most significant structures of our time are to be found among works of pure engineering? We do not have to go all

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the way with those who through excess of zeal or lack of imagination insist that the only solution of our problem is in the passive acceptance of engineering. We are, however, justified in expecting that the design and the method of realization present certain aspects of intelligent coincidence. We have only to transpose the architectural situation into a practical field (which really touches us) to realize its absurdity without argument. Nobody would suggest that an automobile, in order to be expressively designed, must leave the engine frankly exposed to view. Aesthetic as well as practical considerations require that it be covered with some sort of hood. But if devotion to scholarly research and sensitiveness to the charm of vanished modes of locomotion (not to speak of dormant imagination) were to lead us to precede such a vehicle with a papier-mache model of a horse, we would promptly meet with deserved ridicule from the very people who expect their framed vestibules to be filled with elaborate furred vaults.

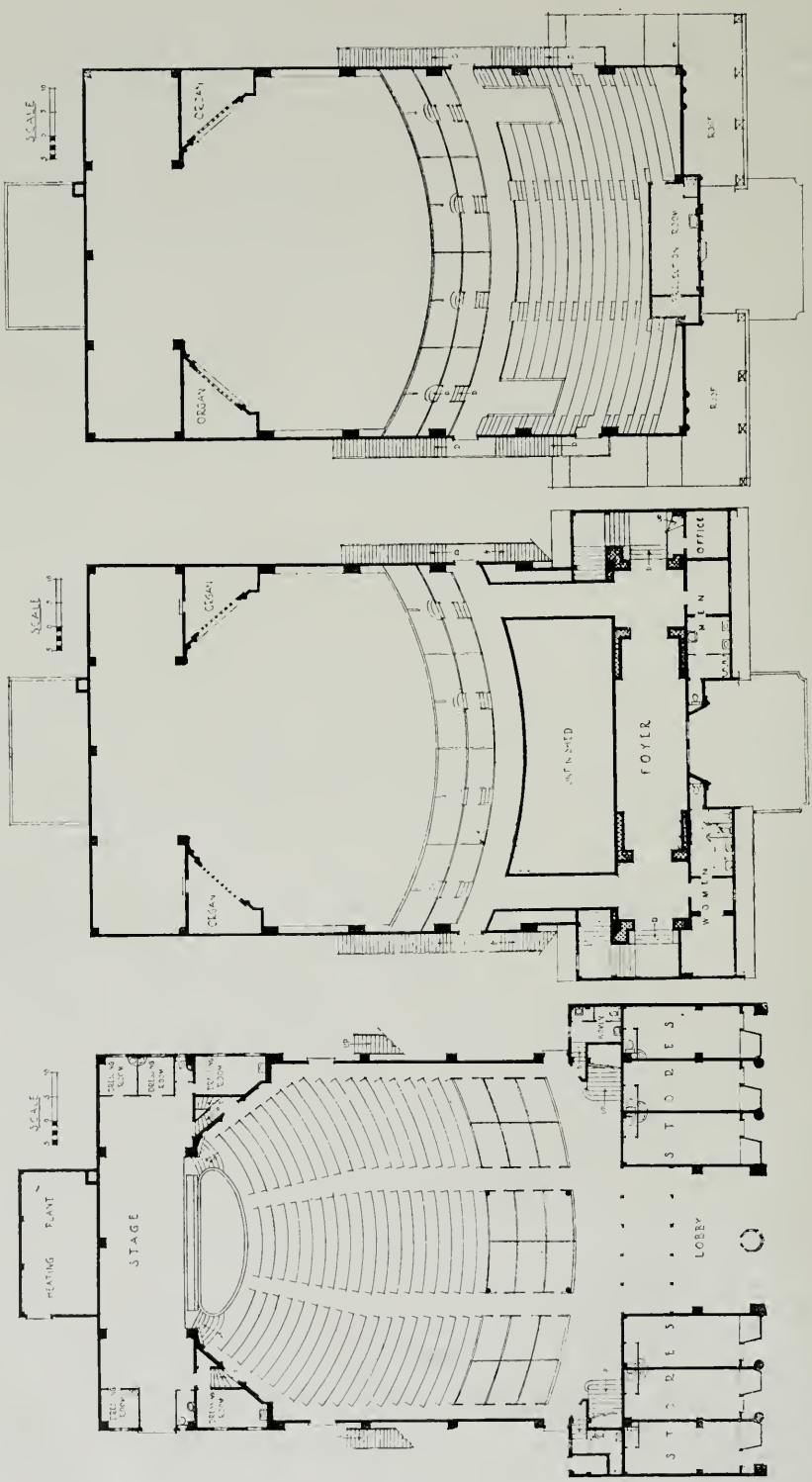
I believe that the necessity for stock-taking is inescapable. Our architecture has ceased to express either itself or us. When we consider certain aspects of our spiritual and physical conditions it would seem only natural to expect that our buildings should look in some way differently than they do. But in what way? There, of course, is the rub. Only too often the advocates of a "modern architecture" betray excessive naivete in their assumptions and remedies. It seems to be too readily assumed that anything which is without recognizable precedent must be ipso facto expressive of the modern spirit; with the corollary that modernism must be something new and strange. Such an attitude makes queerness the criterion of validity. The position requires only to be thus baldly stated to be revealed as absurd. There is, again, often a lamentable failure to realize how styles come about. We can not blithely call, 'Come, let us create a new architectural style,' only to be followed by a host of similarly inspired crusaders all eager to create the same style. Even admitting the possibility of unanimity as to the necessity, differences of opinion as to its nature are conceivable. Such dilettante tampering with evolution is bound to be unavailing.

However much a thoughtful artist must deplore servile imitation of the past, he must also admit there is no virtue in the quest of novelty at any price. Such "originality" is likely to be futile because insincere. And thus we find ourselves between the devil of thick and thin "modernism" and the deep sea of the "best examples." Our problem of expression—that is to say, of finding ourselves a style—is embarrassed by the chaos of the nineteenth century, which affected a break in vital tradition like a punctured syphon. It is even probable that there will never again be a "style" in the narrower historical sense of a definite, circumscribed ornamental vocabulary, but that style in the future must be recognized in a more varied and evasive psychological attitude. At any rate self-conscious artistic uplift is likely to be as sterile as the same thing in the moral field. I remember one of George Ade's Fables in Slang which told of the misfortunes which befell a swell lady who put on her best clothes and went out to dispense sunshine among the poor; the moral being—In uplifting, get underneath. Now I submit that if we are to have a modern architecture, it will not come through much taking of thought on the matter of style, but from getting underneath.

Let me be more explicit. Styles have not been conscious creations, but the inevitable results of particular combinations of tradition and circumstance. Our own tradition as a vital, flowing thing has been broken, leaving us only a collection of static precedents. It is folly to attempt consciously either to recapture the old tradition or create out of whole cloth a new. But every vital style has also depended in a very intimate manner on the methods and materials of construction in vogue. We find ourselves using may of the old, also many wholly new materials, and using them all in new ways, basing the stability of our structures on new principles. Let architects try to understand these materials and principles, to penetrate into their natures and capacities, drawing the clues to their designs from what they there discover, rather than from sumptuous plates of irrelevant "best examples." Today the engineer enjoys all the real thrills of building creation, while the architect furrs; like the sedentary attendants who throw bath robes around athletes fresh from contest. (Incidentally, the athletes sometimes look better without the bath robes.) Imagine the emotional experiences of the architects of Santa Sophia compared with those of the designer of the Pennsylvania Terminal. Architects have been abandoning their birthright to the engineers for a mess of metal lath and plaster. Let them direct their attention from the shell to the reality which holds it up — even considering the disturbing possibility of omitting the shell and retaining only the reality. If sincere architects will thus envisage their problems realistically, not in the light of what other people did in other times and places, but in the light of what they are inevitably doing here and now, without letting themselves know it, the situation will clear by itself. That modern architecture which has made no response to the urgent exhortations of the reformers will be found to have quietly emerged under the effort of workers who seek understanding and strive to express their visions.

It may seem that all this is a ludicrously serious introduction to a structure of the importance of the new San Mateo theatre; likewise that the detailed discussion of the building which follows is out of all proportion to its intrinsic merits. Let me give assurance at once that I am under no illusions as to the work as an artistic achievement. I make bold to present it in these pompous theoretical and practical settings because I believe that, whatever its actual value as a building, however far short it may fall of our own ideals and of the requirements of first rate architecture, it illustrates in its method of conception and working out an attitude which must become general if a modern architecture is to evolve.

The San Mateo theatre is, then, an essay in modern architecture. This does not mean that it was undertaken with any grim determination to be bizarre, as will be readily realized if I have made myself clear above. It means nothing more sinister and revolutionary than this — that the guiding motive was an intention to effect a reasonable relation between the appearance of the building and its structure. In current parlance the first of these elements is called the architecture and the second the engineering. It is the thesis of this building that it takes the two together to constitute Architecture with a capital A. The main questions affecting the designing were not, What has somebody else done at some past time, in some other place, for another purpose? but the following: How shall the building be built? How far can this neces-



PLANS, SAN MATEO THEATRE, SAN MATEO, CALIFORNIA
MORROW & GARREN, ARCHITECTS

sary structure be turned to aesthetic account? and conversely, How little furred ornament and pseudo-structure can be gotten along with? Obstacles came up at one point and another to thwart or obscure the dominant purpose by compromise—the necessity for rigid economy; a certain modicum of conciliation toward current practices and prejudices; and, it must be frankly admitted, inexperience in working under the self-imposed conditions. (No sooner was the building completed than we could have done it over in much more satisfactory fashion.) In the main, however, I believe it is fair to say that the original intention has been measurably realized—at least realized to an extent which justifies the attitude and ideal prompting the conception.

The mandatory conditions of the program were as follows: an interior lot one hundred feet in frontage by about one hundred and sixty feet in depth; an auditorium seating sixteen hundred people, divided between first floor and balcony; a theatre primarily for moving pictures, but also provided with moderate stage for dramatic productions; center entrance for the theatre, flanked on each side by stores about thirty feet deep; a fixed cost (which would be illuminating, but which for obvious reasons can not be revealed). As the building lies outside the city of San Francisco, class C construction (involving wood on interior) was possible, which considerations of economy made necessary. In all other respects the provisions of the San Francisco building law relating to theatres were voluntarily adopted. In conference with the engineer it was decided that the most practicable construction to meet all of these requirements was reinforced concrete exterior frame and curtain walls, with heavy timber balcony framing and heavy timber trusses. During construction the trusses were changed to steel. The stores, naturally, were completely separated from the theatre by unbroken concrete walls and slabs.

Now as to realizing an expressive design out of these conditions. As a general policy it was decided that all concrete on exterior and interior alike was to be left unfurred and unplastered as consistently as possible. The side walls comprised columns two feet in depth at about eighteen feet centers, with median tie beam and beam at top. The total height (about forty-five feet) resulted primarily from a study of sight lines, with a few contradicting considerations of economy and aesthetics up the sleeve during the working out. The curtain wall below the tie beam was placed flush with the inside of the column, above the tie beam, flush with the outside of the column, so that on stripping the forms the upper portion of the wall was already modeled by large recessed panels about a foot and a half deep. In these panels were placed large painted hangings, hung loose like tapestries. For ceiling, wood beams were set over the bottom chords of the trusses, on top of which was laid wood planking. In the front bay adjoining the proscenium the plan was cut in on an angle, for the double purpose of eliminating unsatisfactory seats and providing space for organ and heating outlets. Economy dictated that this be done in wood. This whole bay, therefore, is furred in plaster, and divided from the house by a high plaster arch which screens flood lights for the proscenium; and all of this plaster bay has been worked out with elaborate, even fantastic ornament, in deliberate contrast to the severely structural portion of the theatre behind. The mezzanine foyer underneath the rising balcony is of necessity furred, and arched to take the fullest possible advantage of height under the sloping joists. I believe the only important item of

ornament which is without warrant in either structure or some necessary condition of the building is the large corbel under the main beams on the truss lines. This is no more than a plaster box hung from the truss, and is unquestionably a falling off from the ideal set. At the same time something seemed necessary for aesthetic reasons, and under the practical and economic conditions obtaining no alternative seemed possible. It is conceivable that it might have been made ethically less objectionable by being given a form more fantastic, less pseudo-structural.

I have considered the conditions touching the interior before the exterior, because the building actually grew from the inside out. On the exterior the presence of the stores preceding the theatre made it possible to keep the high structure materially back from the sidewalk line, thereby gaining a very real modeling in the composition, an advantage generally difficult or impossible to obtain on business streets. This juggling with planes, with the additional overhanging projection of the marquise, made it possible to disguise the impression of heavy facade supported on inadequate piers which almost inevitably results when the whole of such a composition with wide openings must be on the front plane. The applied cast cement ornament of the central motif is not necessarily actually antagonistic to the idea animating the building, but it is true that it is irrelevant to the main purpose. However, I very much doubt if any more studiously logical design possible of execution at the price could have been "put over" under the circumstances. For sympathetic collaboration in these matters relating to an expressive use of the structure credit should be given to Mr. Henry D. Dewell, the structural engineer for the building.

The working drawings showed the details of exterior and interior alike designed in freely ornate forms derived from phases of Spanish baroque. During the early stages of construction, Mr. S. Pelenc was commissioned to paint the hangings destined for the wall panels, as well as other decorative work to be done in place, such as proscenium arch, ceiling over proscenium, and balcony front. He set to work with enthusiasm and, before the interior of the building had been detailed, produced sketches for a series of panels strikingly personal and decorative in character, and, to an eye unprepared, almost disconcertingly novel in form. It was immediately felt that the indication of such ornament as the building contained was too traditional in character for a proper setting for such paintings; therefore, in detailing, the entire ornament of the interior was changed to a style less reminiscent, more eclectic, more in accord with the exuberant fancy of Mr. Pelenc's designs.

These paintings rest on a vaguely defined symbolical basis. The underlying idea might be stated as Influences in the formation of California. The two small panels take their motifs from the two early methods of access to the country — Spanish ships, and the covered wagons. The four large panels reflect respectively the following aspects of influence: Mexican, Spanish Mission, Oriental, and present day California. These literary ideas, however, can not be taken too seriously, as allegory; they are merely points of departure for the decorative impulse, convenient handles for those unable to grasp a work of art bodily. As in all art properly decorative (and, for that matter, in non-decorative, too) it is the design which is the important thing. For all that these paintings comprise numerous recognizable objects,

they are none the less strictly non-representative. They are devoid of the slightest preoccupation with illusion or realism in any degree. They are what the average spectator calls "futuristic." That is to say, they are abstract, sheer design in line, mass and color. They are alive with an almost startling brilliance of color. Yet they remain in their places as decorative items of an architectural ensemble. The same remarks apply to the panel of ceiling over the proscenium and to balcony front, which were painted on the plaster of the building. I believe that Mr. Pelenc has created a decorative scheme of real significance, clearly imagined, one to the importance of which people are not yet alive. Mr. Pelenc also co-operated in the most intimate manner on the colors for the purely architectural parts of the building—walls, organ grilles, and the wooden ceiling with its black beams and random multi-colored striations. In fact, only we who were engaged on the building as architects can realize the debt it owes to his continued earnest and sympathetic collaboration.

In justice to everybody concerned, it should be pointed out that many, and the most important, of the inconsistencies evident are due to lack of collaboration on the part of the lessee-manager. The building was realized through the well-known commercial arrangement of a realtor who builds, providing everything of a specifically architectural nature, and leases to a second party who supplies his own equipment and furnishings. Without touching upon the relative merits of the conflicting ideas involved, it is enough to say that those of the lessee in providing furnishings were entirely incompatible with those of the designers in conceiving the building and its decorative scheme. We were deprived of any opportunity even to collaborate in the selection of such vital items as theatre curtain, furniture, drapes, etc., and all of these items provided by the management are in the most painful disharmony with the building as we had carried it out. There is a large number of final points, not necessarily all strictly architectural, at which a well-imagined design must be caught up and its consistency finally clinched; at all of these points our conception was obscured and denied, allowed, as it were, to disintegrate. Recently the main ceiling lighting fixtures have been arbitrarily replaced by others which in their form, as well as in their method of casting light, are totally incongruous with the original design. Architect and decorator alike, therefore, feel that their work has been deprived of a large part of its significance over their heads; that they have, in short, been made the victims of what can most charitably be described as a regrettable incomprehension.

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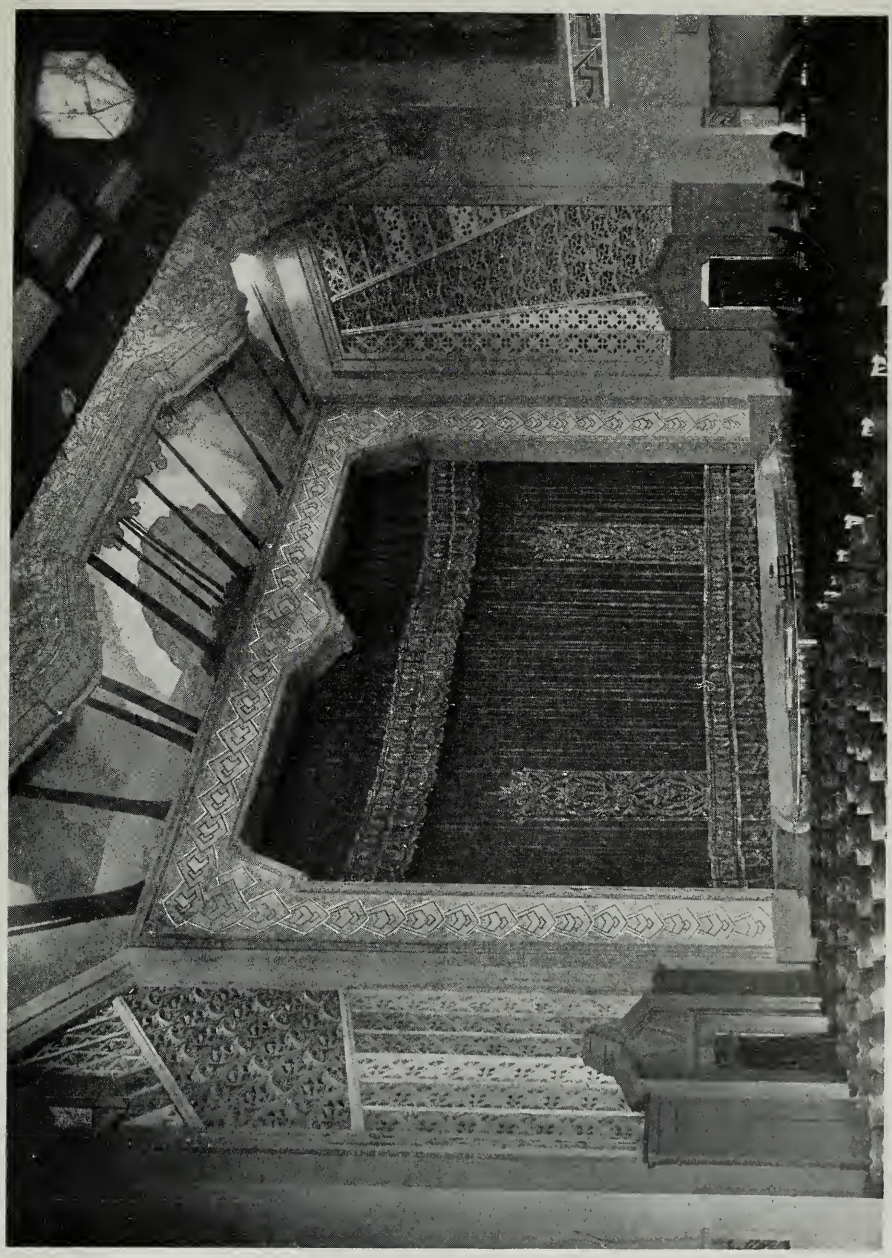
Thirty-Story Office Building

The new Russ building on Montgomery street, San Francisco, will be thirty stories — the highest structure west of Chicago. George W. Kilham is the architect and H. J. Brunnier the engineer. Construction will start in the spring.

SAN MATEO THEATRE, SAN MATEO, CALIFORNIA
MORROW & GARREN, ARCHITECTS



SAN MATEO THEATRE, SAN MATEO, CALIFORNIA
S. PELENC, MURAL PAINTER
MORROW & GARREN, ARCHITECTS

SAN MATEO THEATRE, SAN MATEO, CALIFORNIA
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MORROW & GARREN, ARCHITECTS

Relations of the Architect and Contractor

By J. W. COWPER
Former President, A. G. C., in the November Constructor

IN this article, I am going to use the term "Architect" in its broadest sense, meaning thereby the designer of the structure, whether he be architect or engineer.

Construction embraces a great many elements; two of the most important being the architect and the contractor, one because he is the designer of the project, the other because he is the constructor, and the two together the creators of something permanent, something of useful value that adds to the wealth of the community and the nation, adds to the artistic in replacing nature's beauty destroyed by the ever increasing necessities of civilization, therefore are not their interests along the same lines and not divergent ones and for the greatest success of what is really their joint undertaking, is not co-operation and a mutual interest the best and absolutely the proper method? I for one believe it is and I also believe that the old order of suspicion and mistrust, the idea of the architect that all contractors are a bad lot and out to take advantage of every opportunity to rob the owner either by inferior work or materials or in exorbitant prices, and must be watched and held to the strictest discipline and accountability to get what is intended and sometimes a little more and the idea of the contractor that every architect is against him and will be his ultimate ruin, is passing.

In the preparation of the plans and specifications, the architect is directly the employee of the owner but after their completion and from the time that bids are invited, the architect occupies and should assume an absolutely neutral position, that is, to see that both parties to the contract have fair treatment throughout its execution. It goes without saying that the architect will and does see that the contractor carries out his every obligation, then why should he not, to the same extent, see that the owner is held to the same covenants and carries out his every obligation under the terms of the contract?

The plans and specifications should be complete and in full detail that they may leave nothing to the imagination of the contractor. All indefinite terms and all questions of doubt should be eliminated. It is the architect's responsibility to assume, for the owner, all questions that cannot be predetermined with an absolute definiteness. For instance, if the architect cannot predetermine the nature of the soil 10 feet below the surface of the ground and will not investigate through soundings or other ways, why should the buck be passed to the contractor who has no greater facilities for ascertaining these conditions and, if asked to gamble on the uncertainties, he will usually take the safe side and figure high unless he be the irresponsible kind of a contractor who should not be employed under any conditions.

The more complete and definite the plans and specifications, the fewer changes or extras required and such completeness, beyond all question of doubt, reduces the ultimate or final cost to the owner; the contractor makes more money at a lower price and the architect makes more money out of his fee because he has less supervision and less time to spend on the work. Time of construction will be reduced, thereby putting the project into use for earning a return on the investment at an earlier date and those employed released for other undertakings.

The architect owes a duty to himself as well as the owner to select

a contractor of skill, integrity and responsibility. It is his duty to make a full and thorough investigation of the contractor's qualifications for the particular piece of work before he is permitted to bid and if he does not measure up and qualify in every respect, eliminate him from the bidding list. One contractor may be absolutely qualified to do one kind of a job and not another, or he may be qualified to do work of small magnitude and totally unfitted to do that of large magnitude. His organization and equipment may be wholly unfitted for one class of work and just the thing for another. Now, will not a thorough knowledge of these facts and a selection only of those contractors who are equipped for the particular piece of work in hand result in more satisfactory conditions by producing a superior structure in a shorter time and at a lower ultimate cost? Think it over and see if by this course you cannot best serve your client. Low grade contractors usually produce low grade work and architects and owners who select from this class are lacking in their appreciation of high grade work and if those having contracts to let would remember the old adage, true today and always will be and particularly so in construction—"You generally get what you pay for." I believe it will result in a greatly improved condition in the economic as well as the practical side of the construction industry. I believe in competition but I believe in the right kind of competition and feel that only those contractors who can show that they have the skill, possess the integrity and can show the resources to guarantee a responsibility that instills confidence should be permitted to figure and when the bids have been received, open them publicly and contract for the work with the low bidder.

A fair and equitable contract should be adopted as standard and I know of no better document on record at this time than the fourth edition of the American Institute of Architects Standard Document for buildings or the Uniform Contract prepared by the Joint Conference on Standard Contracts for engineering work, both of these having had the approval of the principal architectural and engineering societies and the two leading Associations of the General Contractors. The terms of these contracts are broad and clear and their interpretation is not involved but, on the other hand, perfectly simple and I believe it is the architect's duty, when required to pass on them, to refrain from being influenced by the owner's wishes. Uniformity of conditions in the contractural relations will be conducive to more equitable practices nationally and by such, the terms and conditions will be clearly understood and interpreted alike throughout the country. This has been best illustrated and proven by the establishment of uniform specifications in the steel industry.

The contractor has a duty and an obligation to perform. He must qualify for "skill, integrity and responsibility." In skill he must have initiative, be an organizer, and at the same time a leader and driver of men. He must know the practical as well as the technical side of construction and have the experience to interpret and carry out the plans and specifications, not only to the letter but the full intent and meaning thereof, obtain materials and labor and assemble them at the proper times and in a manner to produce not a makeshift or semblance of what is intended but a complete structure that represents the highest skill of the crafts engaged and is a monument to the art of its designer and the skill of its constructor.

Integrity speaks for itself and though discredited in the minds of many as a possession of the contractor, the great majority of the men

in this industry have this quality highly developed and as an industry will measure up in this respect with any other industrial group. I know of no set of men who will go so far, even to the point of "leaning backwards" to be fair when receiving like treatment and to carry out in the most faithful, honest and careful manner their obligations. I am afraid that only too often a well meaning act on the part of the contractor, that produces the same or better results that may not follow the letter of the specifications and plans or may be a slight deviation therefrom, is taken as an evasion or attempt to skimp the work which is entirely erroneous, creates suspicion and ill-feeling and often leads to disastrous results.

Now as to responsibility, the contractor must have means to finance his work, goes without saying. He makes up an estimate, of the cost and time required to construct the building or other structure from plans and specifications, in far too many instances incomplete or poorly made and indefinite in the extreme, in a time in most instances entirely too limited, agreeing to execute the work at a fixed price and in a given time, failing in either of which he is penalized in one way or another generally to his financial loss. In doing thus, he must take the risk of all hazards, same as errors in estimating, either mechanical or of judgment, all unforeseen conditions that should be clearly and definitely determined and assumed by the architect but by custom of long standing that amounts to abuse are passed on to the contractor. The ever changing conditions of labor, both as to price and efficiency, the material markets both as to price and availability, neither of which have been fairly stable in the past several years. The delays and destructive consequences of the elements, delays in furnishing of information, delayed payments, and in many instances the lack of the owner's ability to finance his project and meet payments at all, in which event realize the contractor has not always a readily marketable commodity, but a structure designed and built for a special use or purpose and in most instances encumbered by all sorts of legal restrictions, prior liens or mortgages, to protect what he has put into it.

Of course, many contracts are backed by a surety bond but let me tell you with all the emphasis that I can put into it, no bond has ever been written that will give you these three essentials if not in the man or the organization to whom you entrust your work, and I can ask no more reliable authority in confirmation of this fact than the Surety Association of America, which only recently made this statement in a public pamphlet depicting the many uncertainties and the lack of definiteness in the bonding situation.

We, the architect and the contractor, are representative of one of the nation's largest industries and I believe it is wrong to continue along lines of divergent interests, that it is uneconomic and destructive and defeats the very object for which we are striving. I believe that contractors are lacking in appreciation of the value of organization, both national and local, not an organization for selfish purposes but work for the good of the industry which will produce better and more economic conditions for those whom we serve. May I not suggest joint meetings of the architects' and contractors' associations where the various differences of practice and opinion may be talked over with full recognition that each side has its rights, prerogatives and privileges as a means of bringing about a better understanding, greater co-operation and a general improvement in the standards of construction, for there is no industry so much in need of it and in which the elements of skill, integrity and responsibility mean so much. There is in con-

Government Endorsements and the Architect

By WALDON FAWCETT
in The Architectural Record

IT needed but the protest of the operators of certain architectural planning services against Federal encouragement extended to architects' small house service bureaus, to focus attention upon an issue of public policy that has gathered significance with the passing years. From time out of mind, there have recurred at intervals questions of the proprieties in the use, in the architectural field, of governmental endorsements, so called. For all the nation's manifold laws, there exists no U. S. statute covering this subject, which fact but renders the question of the ethics of the practices the more important.

Government endorsements is a term here used in its broadest sense, as embodying everything from the personal and official testimonials of government officials, to the implied endorsement of designs, constructive processes, or commodities, extracted from the circumstance that one branch or another of the national government has adopted or contracted for the subject of exploitation. Architects had their first introduction to the capitalization of governmental prestige in their special field when, during the administration of President Roosevelt, the White House was remodeled, with appropriate recourse to modern appointments as well as high-grade building supplies. Another example of the same spirit in somewhat different form was witnessed incident to the participation of the United States in the world war when the facilities for rapid construction were taxed at the Army cantonments and elsewhere.

It has waited, however, upon current activity on the part of the U. S. Department of Commerce in furtherance of the movement for better architecture in small houses, to precipitate the first controversial issue in this quarter. Protests were lodged by the management of several architectural plan services when the Housing Division of the Department of Commerce issued its handbook for prospective home owners entitled: "How To Own Your Own Home." The particular basis of protest was the advice on page 17 of the booklet wherein readers were admonished to have plans designed by some competent person or provided by some organization that furnishes a complete plan service such as the Architects' Small House Service Bureaus.

The objectors, in effect, challenged the statement in the Government publication that the Architects' Small House Service Bureaus are non-profit-making organizations controlled by the American Institute of Architects. The statement was made, in the letters of protest forwarded to Washington, that the architects who contribute to the Small House Service Bureaus are paid their full normal fees for their work and that the architect - stockholders are allowed to draw annual dividends of eight per cent on their stock. The executives of the private plan enterprises asserted, incident to their criticism, that they would be pleased if they could find outlets for their architectural plans where they would be paid for work executed at full commission rates and allowed eight per cent annually on stock supported by the commercial utilization of such plans.

Secretary of Commerce Hoover has replied personally to the various individuals who have grumbled that the government has gone outside its province by endorsing the Architects' Small House Service Bureaus. Investigation, made in consequence of the complaints lodged, has convinced the head of the Commerce Department that the American Institute of Architects has substantial control through its power of selection of directors. He finds no warrant to interfere or revoke the govern-

mental endorsement so long as excessive profits are not made by the approved service bureaus. He has, however, invited his correspondents to call the matter to his attention if evidence is obtained that the dividend returns of any of the services approved by the Commerce Department exceed eight per cent per annum.

In official circles at Washington,—outside as well as inside the Department of Commerce—the opinion is almost unanimous that there is nothing in the educational program of the Housing Division that controverts the tradition that the government shall not endorse, recommend or publicly approve any undertaking conducted as a commercial enterprise for private profit. As Washington interprets the protests, inspiration for the resentment of the operators of private plan services springs principally from the free publicity given the architects bureaus in a widely-circulated government publication.

In recent years various branches of the government have had recourse to militant policies in order to curb selfish impulses to take the name of Uncle Sam in vain. The Federal Trade Commission, in its capacity as business policeman, has been obliged repeatedly to discipline manufacturers or marketers of commodities, such as paints and varnishes, that have made use of "U. S. Standard" and similar terms, thereby conveying the impression that such wares were made to Government specifications or were supplied for Government use.

Some time ago, the U. S. Bureau of Efficiency made an exhaustive test of a standard article of business equipment. In the report, as published by the government, no mention was made of the identity of the product or of its maker. A private interest reproduced the official report but took the liberty of inserting, in parentheses, the name of the identical product used in the test instead of the designation applicable to all apparatus of the class. The amplifier was promptly called to account.

One of the latest manifestations of this reluctance to allow the government's influence to be borrowed for private benefit is seen in the policy with respect to the sale or loan of motion pictures made by the Government. For educational purposes, the U. S. Department of Agriculture and other branches of the government have embarked, on rather a large scale, in the production of feature films. Copies of these films are supplied at the actual cost of reproduction to private interests that desire to use them for any legitimate purpose and reels are loaned to applicants who agree to pay the cost of transportation both ways. As a precaution, however, against misinterpretation of government comment and endorsement, the sale or loan of government films is made contingent upon promise by the purchaser or borrower that no changes will be made in the "leaders" appearing in the films and that no supplementary leaders will be inserted.

* * * *

Revision of San Francisco Building Code

A committee composed of Architects William Mooser, Albert Evers and John Reid, Jr., from the San Francisco Chapter of the American Institute of Architects; Engineers M. Couchot, Henry Dewell, J. B. Leonard, L. H. Nishkian and H. J. Brunnier of the American Society of Civil Engineers; Messrs. Applegarth and Eliel of the Industrial Association of San Francisco, and Messrs. William H. George, E. T. Thurston and D. B. Farquharson of the Builders' Exchange, are drafting a resolution for presentation to the San Francisco Board of Supervisors recommending certain changes in the building code and more intensive inspection of buildings while in process of construction.

A. G. C. Code of Ethics

The code of ethical practice of the Associated General Contractors of America is having a definite effect in improving conditions in the construction industry, according to "The Constructor," official publication of the association. From time to time, it says, Washington headquarters come into possession of evidence to indicate the striking manner in which the code is impressing itself upon all elements of the industry. The following is quoted from a letter by Burton Lowther, chief engineer of the board of water commissioners of the city and county of Denver, to Maj. W. R. Richards, secretary of the Rocky Mountain Branch of the A. G. C., acknowledging receipt of a copy of the "Code of Ethical Practice":

"After 25 years' experience as a civil engineer, dealing with contract work, I have one ambition that I would like to see fulfilled, and that is a better and closer relation between the contractor, the engineer and the architect. Unquestionably the day is coming when the interests of the contractor and the engineer and architect will be considered mutual and that will be a happy day for the three professions. Looking back over my experience as an engineer, I can see that the tendency has been strongly toward that end, and I believe that during the last few years wonderful progress has been made in this direction.

"I will keep your little code on my desk and read it frequently, and when I catch any uncharitable feeling for a contractor bobbing up in my mind, I will try to realize a little more fully that the contractor has his troubles, too, and that the only chance for disagreement between the contractor and engineer will be somebody not trying to get the viewpoint of the other fellow."

* * * *

Strength of Hollow Tile Walls

An investigation has recently been completed at the Bureau of Standards, Department of Commerce, on the strength of 70 hollow tile walls. The tiles were secured from widely separated regions in the eastern United States and covered practically the entire range in quality of clays used for making hollow tiles. These walls were crushed in the largest testing machine in the world, which can exert a force of 10,000,000 pounds. The results of these tests will enable engineers and architects to use this valuable building material properly since the wall strengths themselves were actually found.

The average person gives little attention to the various types of construction used in the buildings which house and shelter him. It is usually assumed, without question, that the strength of all of the members which make up structures he enters is adequate for the purpose used. In almost all cases this is true, yet few realize that this is not so by accident, but is the result of many years of experience and research.

* * * *

Simplify Sidewalk Lights

At a conference of building interests, technical representatives and manufacturers of glass sidewalk and roof lights, held under the auspices of the division of simplified practice, Department of Commerce, action was taken to have six sizes, two shapes and five styles replace 80 styles, 120 sizes and 10 shapes previously made in this commodity. The action will become effective March 1, 1926, but in the meantime various makers of these commodities will put the program into effect as rapidly as possible.

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THE publishers extend to the readers and advertisers of The Architect and Engineer hearty Christmas greetings and well wishes for a prosperous New Year.

ARCHITECTURE AND ARTISTS

The artist is interested in the artistic quality of buildings, and demands adherence to the canons of architecture, the truth of which has been tested and proved by centuries of employment. He regards buildings just as he would a landscape, as he would trees, hills, or other details of a similar nature, which he considers as "masses."

To satisfy his mind a building should, in its lines, proportions and details, express its character; the effect or feeling of strength, gaiety, sobriety, or even graveness. Between different elevations of the same building there should be agreement, especially when two or more of these are exposed to view simultaneously.

For example, take the "Vanderbilt House" in New York—a French chateau planted in a city, amidst such surroundings as make it appear absolutely incongruous, consequently it offends the artistic eye.

Among our painters (and architects, too) there is evidence of an extraordinary lack of cohesion; a want of interest in the work of each other; but there are signs that this is being corrected. Unless sociability and union exist, there is no discussion, and that means that things are likely to become stagnant.

Mr. J. S. MacDonald, an Australian architect, in a recent talk to members of the profession, prophesied that the time is not far distant when architects and artists will become more closely associated in mind and more useful to each other.

A city is a formal product, being practically utilitarian and a regular skyline is more or less a necessity, but that need not prevent a sufficient amount of variety, to render the result free from monotony, being obtained.

Eventually, all interiors, both domestic and commercial, will be considered to be incomplete in the absence of decoration, and they will be so designed as to be adaptable to it, in which case artists will become indispensable.

PLEA FOR BETTER BUILDING

One of the most important ways in which our tremendous annual fire loss (which now exceeds 500 million dollars) can be reduced is through better building construction, says Mr. S. H. Ingber, Chief of the Fire Resistance Section of the Bureau of Standards, Department of Commerce. While this method of reducing fire losses necessarily takes some time in yielding apparent results, it is nevertheless, one of the most effective ways of combating this destructive element in the long run.

It is to be hoped that as old

buildings are replaced, and as the new construction reflects to an increasing extent the knowledge gained in the laboratory and through studies of actual fires, the destruction of property will decrease.

The Bureau of Standards is carrying out many investigations with the object of improving the fire resistance of building materials and construction. Tests are being made on full-sized columns, walls and partitions, using specially designed furnaces in which the temperatures encountered in a burning building can be duplicated. In this way the behavior of different kinds of construction and the value of all the commonly used building materials can be studied under accurately controlled conditions.

In order to find exactly what temperatures are reached in a burning building and to find how long a given temperature is maintained, the Bureau has constructed a special fire test house in which actual fires are "staged" from time to time. This small building is fitted up with discarded furniture and supplies to simulate any desired occupancy and is then set on fire and the necessary data secured. From the results of this work it has been possible to state just what temperatures ought to be in the experimental furnaces.

Other tests have covered roofing materials, theater curtains, and office furnishings such as filing cabinets and safes. In the case of safes the fire test is followed by a drop test to simulate the rough treatment which a safe receives when the floor of the building collapses. If the safe withstands the drop test it is heated again in the furnace, as would be the case if it had fallen into the basement and was surrounded by burning material.

While these tests may seem destructive on first consideration, they are in reality one of the most constructive lines of work now in progress at the Bureau, and are deserving of every encouragement.

"HEALING" FRACTURED CONCRETE

Do you know that fractured concrete will heal—knit together again like a bone in the arm of a ten-year old boy? Not only that, but become stronger with the lapse of time than it was in the first place?

Do you know that a striking application of this peculiar and little understood property of concrete was used to very great advantage on a recent job of considerable importance?

There are a good many things we don't know about cement and concrete and how they behave under different sets of conditions. Some unusual and highly interesting experiences along this line are to be the theme of a special session of the American Concrete Institute in Chicago, February 23-26, 1926. Some of these experiences will have a very practical bearing on everyday work.

One of the cardinal sins of concreting used to be to retemper a batch that had begun to harden. There are different notions about that. Retempered concrete is of the utmost value in its proper place, giving good results you cannot get with a fresh batch of material.

Both the healing of fractures and the retempering of batches are dangerous expedients carelessly or ignorantly used. So is dynamite, which is very useful.

This particular Institute meeting promises to offer something quite different from anything that has gone before. It will be an experience meeting which will be of interest in no matter what line of construction work you happen to be engaged. The Pacific Coast is going to be well represented at this convention. We are gratified to note this awakened interest in so important a subject.

"CURRENT ARCHITECTURE"
From California Southland

It was Saturday afternoon. We were digging in the garden. A car stopped at the curb and out stepped a prosperous looking bloke with a red face, an elks tooth dangling from a heavy gold chain on his expansive vest. He said he was a contractor and was sent up from the hardware store at the corner where we buy our fertilizer and our porch paint each year. He wanted a set of plans drawn and would we be interested? Well, we might—at least we don't believe in turning people down until we hear what they have to offer. He pulled out a bunch of kodak pictures of a perfectly outlandish house in the early General Grant or Late Confectionery style and said he wanted to copy it. We wanted to ask him if he thought it good policy to make the same mistake twice but we restrained ourselves as above noted. He was taking measurements of the floor plan in the greatest detail. This took a long time, for the measurements must of course, be made when the contractor who was building the house was not on the job. We decided just for fun to see it through like Mr. Britling; so we quoted him a rate per hour payable at delivery of the plans. We threw in a little patter about how good we were at this particular style of "archie techer." He promised to come back early in the week as soon as the measurements were finished and we parted most affably. That was two weeks ago and although we have scanned the papers for any report of what has become of him we haven't heard from him since. Perhaps he went to one of the "two dollar per room" gentlemen whose advertisements we see in the papers so often. What an ignominious ending for a promising "commission." We feel almost as ashamed as if we had been run over by a Ford truck.

THE "OR EQUAL CLAUSE"
Editorial in The American Architect

We reprint on the Publishers' Page in this issue an editorial clipped from our contemporary, The Architect and Engineer, of San Francisco, in which it is set forth that a certain manufacturer whose material was specified in sixty known instances and by different architects, learned on investigation that it had been used in but twenty-one cases.

This is a serious indictment of the profession of architecture. Premising that our contemporary has the facts straight, it shows that in this particular instance 66% of the architects concerned failed to live up to their responsibilities and were in a sense false to their duty to clients by consenting to cancellation or substitution in a case where a particular product was specified.

There appeared in a recent issue of this journal, an article "Or Equal," by F. R. Still, discussing at some length the evils that attend the substitution of other materials for those specified. In the course of that article, Mr. Still wrote:— "The architect is a specialist who is supposed to have all the technical knowledge required to build and equip a building. * * * If a client had the technical knowledge to carry on the project, then he would not call in specialists to perform the operation." Exactly. Therein lies the gist of the matter.

If specifications are prepared in the first instance with the care that they should receive, there will be no change in their provisions nor in the grade of the materials indicated. If they are not so prepared, then the architect is manifestly incompetent.

For a number of years this journal has discussed in its pages the dangers that lurk in loosely written specifications, and the pernicious effect of the "or equal" clause.

In certain lines of trade there was at one time a practice of cancellation. Purchases ostensibly made in good faith were cancelled before delivery or acceptance on delivery refused. This practice led not only to loss on the part of manufacturers, but created a feeling of distrust that injured the square trading man, and left him no redress.

Specifying a certain product is exactly equivalent to its purchase, as it is, or should be considered, evidence that the architect has informed himself as to its merits and demands its use. It is undoubtedly a bona fide purchase. Later to eliminate this specific product, or to change to some other maker's goods, is exactly equivalent to the cancellation of an order, and unfavorable reaction of the manufacturer toward the architect is inevitable. He may rightfully feel that the architect has not dealt ethically or squarely by him.

Who Shall Say?

Can a city circumvent its own laws? This is the question that confronts Los Angeles. Architects' plans for a proposed $5,000,000 city hall for the southern city indicate a height of twenty-eight stories, reaching 430 feet skyward, topped with a cupola. But the limit of height set out in the Los Angeles building ordinances and city charter restrict all buildings to thirteen stories and 150 feet. So now the Los Angeles City Attorney is considering the question. If his ruling is negative, a vote of the people will be required to sanction erection of the proposed municipal building. If the people will not allow Los Angeles to break its own laws, the architects have agreed to furnish plans for an edifice that will conform to the city charter.— San Francisco Chronicle.

With the Architects

Building Reports and Personal Mention

Quake Proof Buildings

An appeal for better building that California may be proof against any earthquakes that may come was made recently by Mr. John P. Buwalda, professor of geology, University of California, before members of the Kiwanis Club.

"The few earthquakes California has had were not as severe as those which have occurred in other parts of the world," said Professor Buwalda, "and to eliminate practically all danger from quakes it is necessary only to build our houses and office structures so they will withstand relatively mild shocks."

Referring to the danger of earthquakes as compared with other catastrophies, the geologist pointed out that earthquakes have been responsible for fewer deaths and injuries than storms and cyclones that occur with greater frequency in other states.

"Not more than 200 persons have lost their lives in California in earthquakes in the past seventy-five years," he said. "Twice this number of people were murdered in New York City last year. Automobile accidents cause thousands of deaths in this country every year. Diseases such as diphtheria result in fifty times as many deaths as occur in earthquakes.

"The danger to life from earthquakes in California is trivial, and if we will build our houses and office structures properly in the future we can practically eliminate all danger to life."

Portland Temple

Architect Morris Whitehouse, Railway Exchange building, Portland, working with Herman Brooklyn of New York City, has completed preliminary plans for the half-million dollar temple, Beth Israel. The preliminary plans have been accepted and the details are now on the boards. Bids will be called early next spring. Mr. Whitehouse recently returned to his office after a month's vacation at Los Gatos, California.

Architects Wayland & Fennell of Boise, Idaho, recently let contracts on two interesting jobs in the Idaho capital. One is a $20,000 residence for Mr. Frank Parkson, and the other is the $30,000 Columbian Club building.

Concrete Bathhouse

Engineer John B. Leonard, 381 Bush street, San Francisco, has prepared plans for a reinforced concrete bathhouse to be built at Seacliff Park, Santa Cruz, for Mr. W. R. Morgan.

Residences Planned

Architect Edward E. Young, 2002 California street, San Francisco, has completed plans for two residences, one to be built on Pacific avenue, for Julia Goldstein at an estimated cost of $25,000, and the other to be erected on Taraval street, near Cortez, San Francisco, for Mr. C. G. Gwynn. The same architect has awarded contracts for a frame and stucco apartment house on Fair Oaks avenue, between 23rd and 24th streets, San Francisco, for Mrs. Margaret Kaiser.

Smith O'Brien Busy

New work in the office of Architect Smith O'Brien, 742 Market street, San Francisco, includes a four-story reinforced concrete novitiate, being the completion of the original scheme, at Los Gatos, and a two-story Class A men's shelter building for the Archbishop of San Francisco Diocese. This building will be erected on Natoma street, to Minna, between Third and Fourth streets, San Francisco, the money having been donated by a San Francisco business man.

Club Room Alterations

Plans have been prepared and work is under way for extensive alterations to the home of the San Francisco Commercial Club in the Chamber of Commerce building, San Francisco. Mr. Frederick Whitton is in charge of the work. Mr. Whitton has also made plans and work is under way for additions to the Feather River Inn at Blairsden, for the Van Noy Interstate Co. Approximately $200,000 is to be expended on the improvements.

Hollywood Hotel

Plans are being prepared by Messrs. Fisher, Lake & Traver, Edwards & Wildey building, Los Angeles, for a twelve-story Class A hotel of four hundred rooms to be built in Hollywood for the Hotel Roosevelt Corporation. Trewhitt & Shields Company are to erect the building at an estimated cost of $2,500,000.

Piedmont Residences

New work in the office of Architect W. E. Schirmer of Oakland, includes three new homes in Piedmont, one for Mr. Roger Chickering, to cost $25,000; one for Mrs. McCaslin to cost $17,000, and one for Miss A. V. Bailey to cost $12,500.

Personal

Architect Charles H. Kysol of Hollywood is in a hospital suffering with a broken leg. The fracture was caused by falling from a retaining wall.

Architect L. A. Smith has moved his office from Lilly-Fletcher building, Third street and Western avenue, to suite 20, Film Exchange building, Los Angeles.

Architect Fred'k H. Meyer of San Francisco has been elected president of the Redwood Highway Association. Mr. Meyer is also chairman of the highway committee of the San Francisco Chamber of Commerce.

Architect Herbert Cohen announces the removal of his offices from the Campbell block to 323-324 S. M. Damon building, Honolulu, Hawaii.

Architect Arthur W. Angel announces the removal of his office from 3404½ Whittier boulevard, Los Angeles, to 3400 East Fifth street, corner Lorena, in the same city.

Architect Rayburn S. Webb has moved his offices from Casper, Wyoming, to the Odd Fellows building, Albany, Georgia. Mr. Webb would like to receive catalogs and building material samples from advertisers of The Architect and Engineer.

Have Three Large Contracts

The San Francisco contracting firm of Mac Donald & Kahn has taken three contracts, the total value of which is close to $5,000,000, during the past month. They will build the new twenty-story Class A apartment hotel at California and Mason streets, Weeks & Day, architects; also the new Bank of Italy office building in San Jose to cost $900,000, and a fifteen-story Class A office building at California and Montgomery streets, San Francisco, from plans by Architects Meyer & Johnson, to cost $1,500,000.

Alameda Lodge Building

Architects Mark T. Jorgensen and F. Amandes, associated, San Francisco, have been commissioned to prepare plans for a three-story Odd Fellows building at Alameda, estimated to cost $75,000. The same firm has completed plans for a new theatre on San Pablo avenue, Berkeley, and for alterations to a theatre in Monterey. They have also made plans for a one-story frame store building adjacent to the Sunset Theatre at Fifteenth avenue and Irving street, San Francisco.

Watsonville Hotel

Plans have been completed for a five-story reinforced concrete hotel at Fourth and Main streets, Watsonville, for Rossetar Brothers and estimated to cost $250,000. Mr. W. H. Weeks, San Francisco and Oakland, is the architect.

Wins Third Prize

Architect Frederick H. Reimers of Oakland has been awarded the third prize in a national competition conducted by the Architectural Forum for the Lehigh Portland Cement Company.

The competition, which was open to all architects in the United States, called for plans for a small residence, and the awards were made by a jury of five prominent eastern architects.

Mr. Reimers' plans were for a quaint rural cottage of English type, low roof line with stone chimney and garden walls. The type is particularly adaptable to California.

Many New Hotels

Hotel construction reports from the service department of Hotel Management magazine show that the hotel building program for October exceeded that of any other month in the history of the world.

One hundred and fifty-one projects were reported, totaling 19,115 rooms, valued at $95,575,000. Of these hotels, seventy-six were built in Florida, thirty-three in New York, eight in Pennsylvania, seven in North Carolina and six in Georgia.

The cost of construction varied from $1,500 per room in Florida to $10,000 per room in New York City, the average for the whole country being about $5,000 per room, with an additional $500 a room for furnishing.

Berkeley Office Building

Architects Miller & Pflueger, Lick building, San Francisco, are preparing plans for a two-story store and office building for the Hunter-Dulin interests on Addison street, East Shattuck to West Shattuck avenue, Berkeley. The improvements will cost close to $500,000. The same architects have completed plans and awarded contract for an attractive club building for the Menlo Country Club.

Store and Office Building

Architect Dodge A. Riedy, Pacific building, San Francisco, has prepared preliminary plans for a five-story Class A store and office building to be erected on the south side of Bush street, between Montgomery and Kearny streets, San Francisco, for Mr. John J. Jerome. For the same client, Mr. Riedy has prepared plans for a commercial garage to be erected at Third and Folsom streets, San Francisco.

Chapter Officers for 1926

The following officers have been elected by Southern California Chapter, American Institute of Architects, for 1926: president, David J. Witmer; vice-president, C. E. Noerenberg; secretary, Edgar H. Cline; treasurer, W. L. Risley; directors, H. C. Chambers, Donald B. Parkinson and Alfred W. Rea.

Engineer T. Ronneberg Busy

Work in the office of Structural Engineer T. Ronneberg, Crocker building, San Francisco, includes a $150,000 plant for the Abbott-Brady Printing Company; a $100,000 building for Mangrum & Otter, Incorporated, and a $60,000 factory for the Hermann Safe Company, all of San Francisco.

Mills College Dormitory

Architect W. H. Ratcliff, Jr., of Berkeley, is completing working drawings for a two-story reinforced concrete dormitory for Mills College. The structure which will accommodate one hundred students, is to cost $200,000, and the plans will be ready for figures early in January.

Designing Sausalito School

Architect Norman R. Coulter, 46 Kearny street, San Francisco, is preparing plans for a reinforced concrete grammar school to cost $90,000 for the Sausalito Grammar School District. There will be eight classrooms and an auditorium.

Veterans' Memorial Building

A site in Lakeside Park, near Fourteenth street, Oakland, has been selected by the City of Oakland and County of Alameda for the proposed Veterans' Memorial building, plans for which are being prepared by Architect Henry H. Meyers, Kohl building, San Francisco.

Bakersfield Office Building

Plans are being prepared by the H. H. Winner Company, San Francisco, for a six-story bank and office building for the Security Trust Company of Bakersfield. The cost is estimated at $250,000.

Granted Certificate to Practice

Architect Walter E. Church, 3008 Benvenue avenue, Berkeley, was granted a certificate to practice architecture in California, by the State Board of Examiners, Northern Division, November 24th, at their meeting.

WANTED—A first-class man to make wrought iron fixtures, lanterns, etc. Apply H. J. Nippert, 418 Washington street, Monterey.

BOOK REVIEWS

Edited by
CHARLES PETER WEEKS

Bats, Mosquitoes and Dollars by Dr. Charles A. R. Campbell. Cloth, 261 pages. 5½ inches, 37 pages of illustrations. $3.00. The Stratford Co., Boston.

There is scarcely a county or municipal engineer but has had to do with water surfaces, reservoirs, pondages, marshes, reclamation and irrigation work, etc., that were involved with the mosquito problem, but perhaps few fully realize its importance as measured by the fact that mosquitoes and mosquitoes only carry and inoculate the infection for malaria, a disease that in the single country of India kills 1,000,000 victims annually besides the vast toll of death and suffering, inefficiency and money loss it imposes on every part of the temperate and torrid zones.

It is not practicable to eliminate, protect or mechanically or chemically treat the exposed water surfaces, but that it is practicable, easy and profitable to eliminate the mosquitoes by natural agents is abundantly demonstrated by Dr. Campbell who points to numerous going examples of complete and permanent success with no failures.

For many years the doctor devoted himself, his time, labor and money single handed to research and experiment in the laboratory, sick room, poisonous marsh land and in the great bat caves of Texas, suffering hardship and disappointment and achieving complete success that has been notably honored by his profession, the grateful populace, state and municipal authorities and by foreign countries, putting him in line for the award of the great Nobel Prize which he richly deserves.

He has found that each bat kills about 4000 mosquitoes nightly and how without care or expense other than the provision of a safe home for them, they will thrive and multiply in it and promptly exterminate all the mosquitoes as fast as they appear over large areas. In 1911 the doctor erected a 40-foot wooden tower at Mitchell Lake, Texas, where a large sheet of putrid water bred such quantities of mosquitoes that they almost killed cattle and poultry and spread malaria so that 89% of the residents near by suffered and from 2% to 5% of them died annually from it.

In three years mosquitoes and malaria disappeared and have not returned. The bat roost has many thousand permanent residents, and many other similar roosts have been successfully built by private and public interests in Texas and elsewhere. The doctor's adventures and experiments while studying the bats, their wonderful habits and family life, and his war on their predatory enemies, are interpersed throughout the book and make it more fascinating than a romance.

Best of all the bat roosts are every where practicable where needed, cheap and easy to build and colonize, need no equipment or attendance and provide enough commercially valuable bat guano to pay handsome annual dividends, greater than the interest on the investment.

Frank W. Skinner, C. E.

Field of the Contractor

Who Is Lowest Responsible Bidder?

WHO is the "lowest responsible bidder" in the opinion of courts that have had occasion to rule on the question?

The Supreme Court of Pennsylvania says: "The term 'lowest responsible bidder' does not mean the lowest bidder in dollars; nor does it mean the board may capriciously select a higher bidder regardless of responsibility or cost. What the law requires is the exercise of a sound discretion by the directors.

"They should call to their assistance means of information at hand to form an intelligent judgment. They should investigate the bidders to learn their financial standing, reputation, experience, resources, facilities, judgment and efficiency as builders. This was not done. The court below censures the board for omitting this important step, but it holds, inasmuch as they had ample knowledge of the successful bidder and the merits of his work, the contract could be awarded. This might do in private affairs, but will not pass when public funds are at stake; it is not the exercise of discretion. Though the directors were not bound in law to give the contract to the lowest bidder, who might be irresponsible, they were bound to investigate, and if the bidder measured up to the law requirements as a responsible party, the board could not capriciously award the contract to another. Giving a bond alone does not make up for responsibility." (Hibbs vs. Arnsebern, 119 Atlantic, 727).

"As applied to a bidder who proposes to undertake the performance of the stipulations and conditions of such a contract as this, we regard the term 'lowest responsible bidder' as including the ability to respond by the discharge of his obligations in accordance with what may be expected or demanded under the terms of the contract. 1 * * And we think that the added requirement that the bidder shall be responsible has a broader meaning than the mere financial ability to respond in damages which is provided for by the bond." (Supreme Court of Illinois, People vs. Kent, 43 N. E., 760).

"We conclude that the word 'responsible' in the phrase 'lowest responsible bidder' was used by the legislature in the sense in which it had long been interpreted by the court and text writers and must be held to imply skill, judgment and integrity necessary to the faithful performance of the contract as well as sufficient financial resources and ability." (Supreme Court of Kansas, 118 Pac., 874).

In view of these actual opinions it would seem that public bodies, having contracts to let, would feel obligated to go a little further in the investigation of the low bidder than that he is able to furnish a bond before they have discharged their own obligation to the public and their own responsibility in the eyes of the law.—Master Builder.

Temperature Changes Plasterer's Problem

A warning to home-builders that extra care should be exercised in the plastering of bathrooms and kitchens, because of the excessive changes in temperature in these two rooms, has been sounded by Mr. John W. Ford, Jr., head of the Bishopric Manufacturing Company of California.

"These rooms," he points out, "give the plasterer especially trying conditions to meet, since they are subjected to many temperature changes and are often filled with steam and vapor.

"Temperature changes tend to make the plaster expand and contract. It is therefore necessary to have a strong base for the plaster if it is to be prevented from cracking and falling. In some cases it is even necessary to put in extra bracing behind the wall backing.

"The research laboratories of the Bishopric Company spent many months in an effort to solve this difficulty. A doubly-beveled lath which grips the plaster with unusual tenacity was developed. Tests made in scores of cities throughout the country indicate that cracks can be largely eliminated by using doubly-beveled lath."

Books on Gravel Roads

Editor The Architect and Engineer,
Sir:—

On account of the great interest in secondary highways, the Engineering Societies Library has prepared a bibliography (S. 4085) of books and articles on earth and gravel roads, published between January, 1920 and June, 1925.

The list contains 140 references with brief annotations. Mimeographed copies may be obtained for $1.50 each by writing to the Engineering Societies Library, 29 West 39th street, New York.

We shall be very grateful for any announcement of this bibliography that you may make in your publication as we wish to bring it to the attention of all persons to whom it might be of interest.

Yours very truly,
HARRISON W. CRAVER,

What Price-Cutting Costs

From the Los Angeles office of the Standard Sanitary Manufacturing Company comes a concise statement of the effect of price-cutting on profits.

"The following compares the percentage of price-cut with the additional volume of business necessary to hold up profits to a certain definite level:

"On 25 per cent margin of profit a cut of 5 per cent requires 18⅔ per cent more volume.

"Eight per cent cut requires 35⅛ per cent more volume.

"Ten per cent cut requires 50 per cent more volume.

"Twelve and a half per cent cut requires 75 per cent more volume.

"Fifteen per cent cut requires 112½ per cent more volume.

"In other words, if you cut the price 15 per cent on a $100.00 sale, it is necessary to sell $112.50 worth of additional business before there can be a $25 profit provided for in the original sale."

Old Mission Cement Plant to be Enlarged

President Humphrey of the Old Mission Portland Cement Company, in his annual report to stockholders, reported a healthy growth of the company, as evidenced by increased sales and production, compared with 1924, and emphasized the fact that the outlook for the cement industry is good generally.

Commenting upon the affairs of the company during the year, Mr. Humphrey said that the capacity of the company's mill at San Juan Bautista, is taxed to the limit, adding that the company expended $250,000 last year for improvements and extensions, while $750,000 additional will be expended during 1926 to increase the plant capacity to approximately 1,500,000 barrels a year, a program decided upon at the last annual meeting.

Federal Building Program

News dispatches from Washington indicate that the present administration is favorable toward an early resumption of the Federal building program, which was halted during the war. Plans are being prepared by the U. S. Treasury Department for Federal buildings in various parts of the country, which, when completed, will effect a saving of approximately $24,000,000 annually in rentals now paid for buildings occupied by the different branches of the government.

Richmond Schools

Architect James T. Narbett of Richmond has been commissioned to prepare plans for additions to the Fairmont grammar school, Richmond, to cost $60,000, and also an addition to the Peres grammar school to cost a like amount. Mr. Narbett is also busy designing a number of residences.

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RECENT TRADE PUBLICATIONS

Aluminum Paint — Published by the Aluminum Company of America: branches in all principal cities. This is a treatise on the physical properties of aluminum paint and its uses in modern industry. The author, Junius D. Edwards, assistant director of research, has completed a most interesting story, beginning with a discussion of the mixing of aluminum paint and continuing with an outline of its application, durability and appearance; together with the various uses to which it may be put. The illustrations are unique and convincing.

Merger of Wadsworth-Howland

Another recent merger of importance to the paint industry is reported taking place at Boston during the last month, the Wadsworth-Howland Company, Inc., of Boston, being transferred to the Devoe and Raynolds, Inc. President E. S. Phillips of Devoe and Raynolds Company, Inc., was made president of the old company, succeeding Mr. A. P. Felton, who retired both from the presidency and the board of directors.

More capital has been added to the company which will enable it to increase the output of the Wadsworth - Howland plant. President Phillips announces that no changes will be made in the present method of running the business.

Suburbanites

Man from Florida—"Yes sir, 500,000 in Miami by 1927. Why, we've got not so far from that now—"

Californian — "Counting the outlying population, of course?"

Man from Florida—"Naw! The outlying population lives in California."

—The Continent.

Monterey Hotel Contract

A contract has been let to Fred W. McCrary of Monterey to build a nine-story reinforced concrete hotel at Monterey for Mr. Jean Julliard and Associates, from plans by Architect Charles F. Whittlesey of Los Angeles.

Hotel for Tracy

Architect Paul V. Tuttle of Oakland has been commissioned to prepare plans for a Spanish type hotel at Tracy, estimated to cost $100,000. Mr. Tuttle is also designing a church for Long Beach and one for San Diego.

Women's Hotel

Architect Julia Morgan of San Francisco has completed plans for a three-story reinforced concrete women's hotel at Santa Barbara to be known as the Margaret Baylor Inn.

Country Club

Architect Jno. White of Howard and White, San Francisco, has prepared preliminary plans for a country club building to be built six miles from Ross for the Meadow Club of Tamalpais.

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912,

Of THE ARCHITECT AND ENGINEER, published monthly at San Francisco, California, for October 1st, 1925.

State of California,

City and County of San Francisco

Before me, a Notary Public in and for the State and county aforesaid, personally appeared W. J. L. Kierulff, who, having been duly sworn according to law, deposes and says that he is the business manager and publisher of THE ARCHITECT AND ENGINEER, Inc., and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Name of — Post Office Address

Publisher, The Architect and Engineer, Inc., 68 Post St., San Francisco.

Editor, Fred'k. W. Jones, 68 Post St., San Francisco.

Business Manager, W. J. L. Kierulff, 68 Post St., San Francisco.

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4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is——. (This information is required from daily publications only.)

W. J. L. KIERULFF, President.

Sworn to and subscribed before me this 29th day of September, 1925.

MARY D. F. HUDSON

Notary Public in and for the City and County of San Francisco, State of California.

My Commission expires December 22nd, 1928.

San Francisco Building Forecast for 1926

FROM $75,000,000 to $100,000,000 will be expended in San Francisco and the Bay region in 1926 for building construction. If these figures are realized, and there is every reason to believe they will be at this writing, all previous building records in the San Francisco district will have been broken. The outstanding feature of this forecast is the exceptionally large number of high-class office buildings planned, there being no less than a dozen such structures, ranging in height from ten to thirty stories and representing in value more than $15,000,000. Next to commercial structures, there will be a number of large hotels and community apartment houses, the cost of which will run close to twenty million.

A number of notable buildings of a public and semi-public nature will be erected during the year, both in San Francisco and Oakland. The San Francisco Civic Center will be further improved by the erection of an American Legion building and an opera house, the two structures to cost not less than a million dollars. There is still available from bonds voted about $2,000,000 for new school buildings in San Francisco and plans for all of these structures are now in the hands of architects. Some eight or ten new theatres will be erected during the year, the largest of which promises to be the $3,000,000 playhouse which the Capitol Company, a subsidiary of the Bancitaly Corporation, has projected for Market, Hayes, Larkin and Polk streets. The Fox Film Company of New York City has been announced as the probable lessees. The plans for this theatre are now in the hands of Charles B. Lamb and William Freed, architects of New York City.

Among the notable club buildings to be erected in 1926 will be a twelve-story home for the Olympic Club at Post and Mason streets, and a fifteen-story building for the Federated Women's Clubs at Sutter and Mason streets.

In Oakland the Scottish Rite Order of Masons will spend $1,000,0000 in the construction of a cathedral on the west side of Oak street, facing Lake Merritt. The largest church project of the year will be the completion of Grace Cathedral at California and Jones streets, San Francisco, plans for which are being prepared by Architect Lewis P. Hobart. A million dollars will be expended on this edifice.

Hotel projects announced for 1926 include a twenty-story Class A store and hotel building on the southeast corner of Sutter and Powell streets for the Hutchins Hotel Company, Reid Brothers, architects; a twenty-story Class A apartment hotel on the site of the Mark Hopkins Institute at California and Mason streets costing $2,500,000 and on which construction has already started; a $750,000 addition to the Hotel Whitcomb, construction of which is under way. In Oakland, the United Income Properties Company of San Francisco will finance a fourteen-story Class A hotel at San Pablo avenue, Market and 28th streets, estimated to cost $2,000,000. In the same city, construction is going forward on a ten-story hotel at 19th and Franklin streets, for J. K. Leaming. Down the peninsula a $600,000 hotel is announced by B. Getz for San Mateo. At San Jose the T. S. Montgomery Interests have had plans prepared by Weeks & Day of San Francisco for a million dollar hotel. At Del Monte the new Del Monte Hotel is under construction and at Monterey a contract has just been let for a nine-story reinforced concrete hotel for the San Carlos Hotel Company, Jean Julliard, manager.

St. Mary's College in Oakland will spend a million dollars or more for new school buildings, while St. Mary's Hospital in San Francisco will build a new wing from plans by Architects Shea & Shea, at an estimated cost of $800,000. Additions are also being planned to the St. Francis Hospital at Bush and Hyde streets. New buildings are to be erected for St. Joseph's Hospital on Buena Vista avenue, San Francisco, at a cost of a million dollars and in Oakland, the Hillcrest Hospital will erect a $500,000 institution on Orchard street. The new Highland Hospital in Oakland remains to be completed as well as the Providence Hospital. It will require at least a million dollars to finish these two structures. Oakland has a school building program to be completed next year with more than $2,500,000 in bond money available.

The State Harbor Commission will spend $2,000,000 or more on water front improvements, including a three-story reinforced concrete office and garage building on the block between Folsom, Steuart and The Embarcadero; a 600-foot pier south of Channel street covered with a reinforced concrete shed and a one-story concrete wharf shed on pier 50 opposite Mission Rock.

Style Trend in Lamps

By BETTY BARRETT,
in California Home Owner

THE lamp is now an accepted furnishing unit in the modern home, and a very useful one it is, combining so ideally the function of the useful and the beautiful. But there are lamps and lamps. In fact, it really seems as though styles in lamps change almost more frequently than styles in clothes. The most important thing is, of course, to have one's lamps harmonize with the

(Concluded on page 131)

Index to Advertisements

(For Classified Directory and Specification Index see pages 128 to 144)

A

Adam Electric Co., Frank ... 29
Alhambra Stucco Co. ... 151
Aluminum Company of America ... 28
American Chain Company ... 133
American Face Brick Ass'n. ... 14-15
American Marble & Mosaic Co. ... 44
American Radiator Co. ... 43
American Rolling Mill Co. ... 21
American Rubber Mfg. Co. ... 169
American Window Glass Co. ... 137
Arkansas Oak Flooring Co. ... 131
Atlas Portland Cement ... 3rd Cover
Automatic Heater Co. ... 141

B

Babcock Company, C. B. ... 44
Bacon, Edward R., Co. ... 159
Badt-Falk & Co. ... 179
Barrett & Hilp ... 172
Bartlett, John M. ... 176
Bass-Hueter Paint Co. ... 127-130
Birchfield Boiler Co. ... 7
Bishopric Mfg. Co. ... 27
Bonded Floors Co., Inc. ... Back Cover
Bowser, S. F. & Company ... 155
Brunswick-Balke-Collender Co. ... 26
Bull-Dog Floor Clip Co. ... 162
Bunting Iron Works ... 167
Butte Electric and Mfg. Co. ... 175
Butte Electrical Equipment Co. ... 165
Buzzell Electric Works ... 175

C

Cabot, Samuel Company ... 147
Califelt Insulation Co. ... 141
California Artistic Metal & Wire Company ... 173
California Brick Company ... 16
California Institute of Steel Construction ... 172
California Steam & Plumbing Supply Co. ... 154
California Stucco Products Co. ... 167
California Wall Bed Co. ... 156
Carter Bloxonend Flooring Co. ... 161
Carter, M. S. ... 171
Cement Gun Construction Co. ... 176
Central Electric Company ... 171
Central Iron Works ... 181
Clark, N. & Sons ... 17
Clervi Marble & Mosaic Co. ... 172
Clinton Construction Company ... 181
Coast Construction Co. ... 172
Coast Rock & Gravel Company ... 153
Cobbledick-Kibbe Glass Co. ... 171
Coleman, Alex ... 174
Columbia Marble Company ... 159
Cook, Ray Marble Co. ... 138
Crittall Casement Window Co. ... 11

D

Day, Thomas ... 148
Del Monte Properties Company ... 155
Detroit Graphite Co. ... 133
Detroit Steel Products Company ... 3
Drendell Electrical & Mfg. Co. ... 165

E

Electric Construction Company ... 175
Electric Development Co. ... 175
Elevator Supplies Company, Inc. ... 171
Ellery Arms Company ... 169
Enterprise Electric Works ... 175

F

Fairbanks Morse Co. ... 178
Federal Ornamental Iron Works ... 173
Fidelity & Casualty Company ... 169
Fire Protection Products Co. ... 153
Fire Protection Engineering Co. ... 181
Flint, Clifton L. ... 144
Frigidaire Electric Refrigerator ... 142

G

Garnett Young & Company ... 180
General Electric Co. ... 41
General Fireproofing Building Products ... 38 & 39
Gilley-Schmid Company ... 178
Globe Automatic Sprinkler Co. ... 178
Globe Indemnity Company ... 177
Gladding, McBean Corporation ... 13
Golden Gate Iron Works ... 173
Gottlieb & Bockfinger ... 139
Goyette Machine Works ... 162
Graham & Norton Co. ... 171
Grinnell Company of California ... 181
Gunn-Carle Company ... 145

H

Haines, Jones & Cadbury Co. ... 20
Hansen, Robertson & Zumwalt ... 181
Hammond, M. E. ... 136
Harvey Hubbell, Inc. ... 25
Hauser Window Company ... 160
Haws Sanitary Drinking Faucet Co. ... 34
Herrick Iron Works ... 173
Higgins Lumber Company ... 161
Hill, Hubbell & Company ... 162
Hockaday Co. ... 4
Holbrook, Merrill & Stetson ... 154
Home Manufacturing Company ... 134
Horn, A. C. Co. ... 143
Hunt & Company, Robt. W. ... 159
Hunter & Hudson ... 170

I

Independent Automatic Sprinkler Co. ... 132
Industrial Construction Co. ... 177

J

Jackson Pump Mfg. Co. ... 148
Johns-Manville, Inc. ... 170
Johnson, Anton ... 181
Johnson Service Co. ... 6
Johnson, S. T. Company ... 144
Joost Bros., Inc. ... 170
Jones Bros., Asbestos Supply Co. ... 172
Judson Manufacturing Company ... 173

K

Kennedy Valve Company ... 147
Kewanee Boiler Company ... 9
Kinnear Manufacturing Co. ... 146
Kissell, I. R. ... 177
Knowles, A. ... 179
Krueger, James I. ... 179

L

Langlais, Chas. A. ... 175
Lannom Brothers ... 180
Larsen, Siegrist Co., Inc. ... 179
Lawson & Drucker ... 174
Lawton & Vezey ... 176
Leather Mat Mfg. Co. ... 169
Lindgren, Swinerton, Inc. ... 160
Littlefield, R. W. ... 172